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west virginia department of environmental protection

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Office of Oil and Gas  
601 57<sup>th</sup> Street, S.E.  
Charleston, WV 25304  
(304) 926-0450  
fax: (304) 926-0452

Austin Caperton, Cabinet Secretary  
[www.dep.wv.gov](http://www.dep.wv.gov)

Friday, May 25, 2018  
WELL WORK PERMIT  
Horizontal 6A / New Drill

ARSENAL RESOURCES LLC  
6031 WALLACE ROAD EXTENSION SUITE 603

WEXFORD, PA 15090

Re: Permit approval for HOWDERSHELT BCH 205H  
47-001-03359-00-00

This well work permit is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to any additional specific conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas Inspector.

Please be advised that form WR-35, Well Operators Report of Well Work is to be submitted to this office within 90 days of completion of permitted well work, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

Per 35 CSR 4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926- 0450.

James A. Martin  
Chief

Operator's Well Number: HOWDERSHELT BCH 205H  
Farm Name: HOWDERSHELT LIVING TRU  
U.S. WELL NUMBER: 47-001-03359-00-00  
Horizontal 6A New Drill  
Date Issued: 5/25/2018

**PERMIT CONDITIONS 4700103359**

West Virginia Code § 22-6A-8(d) allows the Office of Oil and Gas to place specific conditions upon this permit. Permit conditions have the same effect as law. Failure to adhere to the specified permit conditions may result in enforcement action.

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**CONDITIONS**

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1. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACE). Through this permit, you are hereby being advised to consult with USACE regarding this proposed activity.
2. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than one hundred (100) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.
3. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the moisture content of the fill material shall be within limits as determined by the Standard Proctor Density test of the actual soils used in specific engineered fill, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort, to achieve 95 % compaction of the optimum density. Each lift shall be tested for compaction, with a minimum of two tests per lift per acre of fill. All test results shall be maintained on site and available for review.
4. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.
5. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled *Water Well Regulations*, 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply well shall be flow tested by the operator upon request of the drinking well owner prior to operating the water supply well.
6. Pursuant to the requirements pertaining to the sampling of domestic water supply wells/springs the operator shall, no later than thirty (30) days after receipt of analytical data provide a written copy to the Chief and any of the users who may have requested such analyses.
7. 24 hours prior to the initiation of the completion process the operator shall notify the Chief or his designee.
8. During the completion process the operator shall monitor annular pressures and report any anomaly noticed to the chief or his designee immediately.
9. If any explosion or other accident causing loss of life or serious personal injury occurs in or about a well or well work on a well, the well operator or its contractor shall give notice, stating the particulars of the explosion or accident, to the oil and gas inspector and the Chief, within 24 hours of said accident.
10. During the casing and cementing process, in the event cement does not return to the surface, the oil and gas inspector shall be notified within 24 hours.

API Number: \_\_\_\_\_

# PERMIT CONDITIONS 4700103359

11. The operator shall provide to the Office of Oil and Gas the dates of each of the following within 30 days of their occurrence: completion of construction of the well pad, commencement of drilling, cessation of drilling, completion of any other permitted well work, and completion of the well. Such notice shall be provided by sending an email to [DEPOOGNotify@wv.gov](mailto:DEPOOGNotify@wv.gov).

05/25/2018

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
WELL WORK PERMIT APPLICATION

1) Well Operator: Arsenal Resources      494519412      Barbour      Cove      Nestorville  
Operator ID      County      District      Quadrangle

2) Operator's Well Number: Howdershelt BCH 205      Well Pad Name: Howdershelt BCH

3) Farm Name/Surface Owner: Melvin and Renee Howdershelt      Public Road Access: CR 38

4) Elevation, current ground: 1552.4      Elevation, proposed post-construction: 1558.0

5) Well Type (a) Gas       Oil \_\_\_\_\_      Underground Storage \_\_\_\_\_

Other \_\_\_\_\_

(b) If Gas Shallow       Deep \_\_\_\_\_

Horizontal  \_\_\_\_\_

6) Existing Pad: Yes or No No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):  
Target Formation- Marcellus Shale, Top- 7513.0ft, Bottom- 7608.0ft, Anticipated Thickness- 95ft, Associated Pressure- 0.5 psi/ft

8) Proposed Total Vertical Depth: 7594' TVD

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 16112'

11) Proposed Horizontal Leg Length: 8020.36'

12) Approximate Fresh Water Strata Depths: 950'

13) Method to Determine Fresh Water Depths: Offsetting Well Water Depths(001-01564, 001-01782, 001-01784, 001-03054, 001-03058)

14) Approximate Saltwater Depths: 1900'

15) Approximate Coal Seam Depths: Upper Freeport 163', Lower Freeport 195', Upper Kittanning 255', Middle Kittanning 344', Lower Kittanning 364'

16) Approximate Depth to Possible Void (coal mine, karst, other): None Known

17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine?      Yes \_\_\_\_\_      No None Known

(a) If Yes, provide Mine Info: Name: \_\_\_\_\_  
Depth: \_\_\_\_\_  
Seam: \_\_\_\_\_  
Owner: \_\_\_\_\_

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WW-6B  
(04/15)

API NO. 47- \_\_\_\_\_  
OPERATOR WELL NO. Howdershelt BCH 205  
Well Pad Name: Howdershelt BCH

18)

**CASING AND TUBING PROGRAM**

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	24	New	H-40	94	80	80	CTS
Fresh Water	13.375	New	J-55	54.5	1,025	1,025	CTS
Coal							
Intermediate	9.625	New	J-55	40	2,000	2,000	CTS
Production	5.5	New	P-110	20	16,112	16,112	TOC @ 1,850
Tubing							
Liners							

*Edward J. Lynch*  
12-13-17

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	24	36			0	Type 1, 3% CaCl2	1.2
Fresh Water	13.375	17.5	0.38	2,730	900	Class A, 3% CaCl2	1.2
Coal							
Intermediate	9.625	12.25	0.395	3,950	1,500	Class A, 3% CaCl2	1.29
Production	5.5	8.5-8.75	0.361	12,640	9,500	Class A/50:50 Poz	1.29/1.34
Tubing					5,000		
Liners					N/A		

**PACKERS**

Kind:				
Sizes:				
Depths Set:				

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WW-6B  
(10/14)

API NO. 47- \_\_\_\_\_  
OPERATOR WELL NO. Howdershell BCH 205  
Well Pad Name: Howdershell BCH

19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

The well will be started with a conductor rig drilling a 36" hole to Conductor programmed depth then running 24" casing and circulate cement back to surface. The conductor rig will move out and the drilling rig will move in and rig up. The drilling rig will then spud a 17 1/2" hole and drill to fresh water casing (Surface) to the programmed depth, Run 13- 3/8" casing and cement to surface. The rig will continue drilling a 12- 1/4" intermediate hole to the programmed depth, run 9- 5/8" casing and cement to surface. The rig will then continue to drill an 8- 3/4" hole to a designed KOP. We will then start drilling the curve and lateral section to the programmed total measured depth, run 5 1/2" casing and cement according to the program.

20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:

The well will be completed using a plug and perforation method and stimulated with a slickwater and sand slurry. The anticipated maximum rate will be 90 bpm and the maximum pressure will be 9,500 psi.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 10.9

22) Area to be disturbed for well pad only, less access road (acres): 6.8

23) Describe centralizer placement for each casing string:

24"- No centralizers 13 3/8" – one bow spring centralizer on every other joint 9 5/8" – one bow spring centralizer every third joint from TD to surface 5 1/2" – one semi rigid centralizer on every joint from TD of casing to end of curve. Then every other joint to KOP. Every third joint from KOP to 2,100'; there will be no centralizers from 2,100 to surface.

24) Describe all cement additives associated with each cement type:

24" will be grouted from surface. The 13 3/8" casing will be cemented to surface with Class A cement and no greater than 3% CaCl (calcium chloride). The 9 5/8" casing will be cemented to surface with Class A cement, & no greater than 3% calcium chloride. The 5 1/2" production string will be cemented back to 1,850' (+/- 150' above the casing shoe for the 9 5/8") with Type 1 or Class A and 50/50 Poz cement retarded (to extend pumpability) cellophane flaked for fluid loss, Bentonite gel as an extender (increased pumpability and fluid loss), a defoaming agent to decrease cement foaming during mixing to insure the cement is of proper weight to placement and possibly gypsum gas blocking additive to aid in blocking/gas migration (in combination with other additive mentioned here, helps cement achieve a "right angle" set) during the plastic phase of the cement set-up.

25) Proposed borehole conditioning procedures:

Top holes will be drilled with fresh water to KOP. At KOP, the wellbore will be loaded with synthetic oil based mud, barite-weighted mud system with such properties as to build a filter-cake on the face to the bore-hole. This will provide lubricity as well as stabilizing the well bore. We will begin rotating the drill string and mud will be circulated upon reaching TD until no further cuttings are observed coming across the shaker screens. Once clean mud is circulated back to surface, we will pull three stands of drill pipe, load the hole, pull three stands and load the hole. The weight indicator on the rig will be monitored for any occurrences of drag and if any, additional hole cleaning efforts will be applied to that section of the well.

\*Note: Attach additional sheets as needed.

<b>Howdershelt 205</b>		
<b>CEMENT ADDITIVES</b>		
	<b>Name</b>	<b>Purpose</b>
Additive #1:	Bentonite	Helping fluid loss, reducing free water
Additive #2:	Calcium Chloride	Accelerator for low temp application
Additive #3:	Celloflake	Loss circulation additive
Additive #4:	Gypsum	Used for thixotropic properties
Additive #5:	Lignosulfonate	Low temp cement retarder
Additive #6:	Naphthalene Based Dispersant	Used to improve rheological properties of cement
Additive #7:	Cellulose	Help with fluid loss

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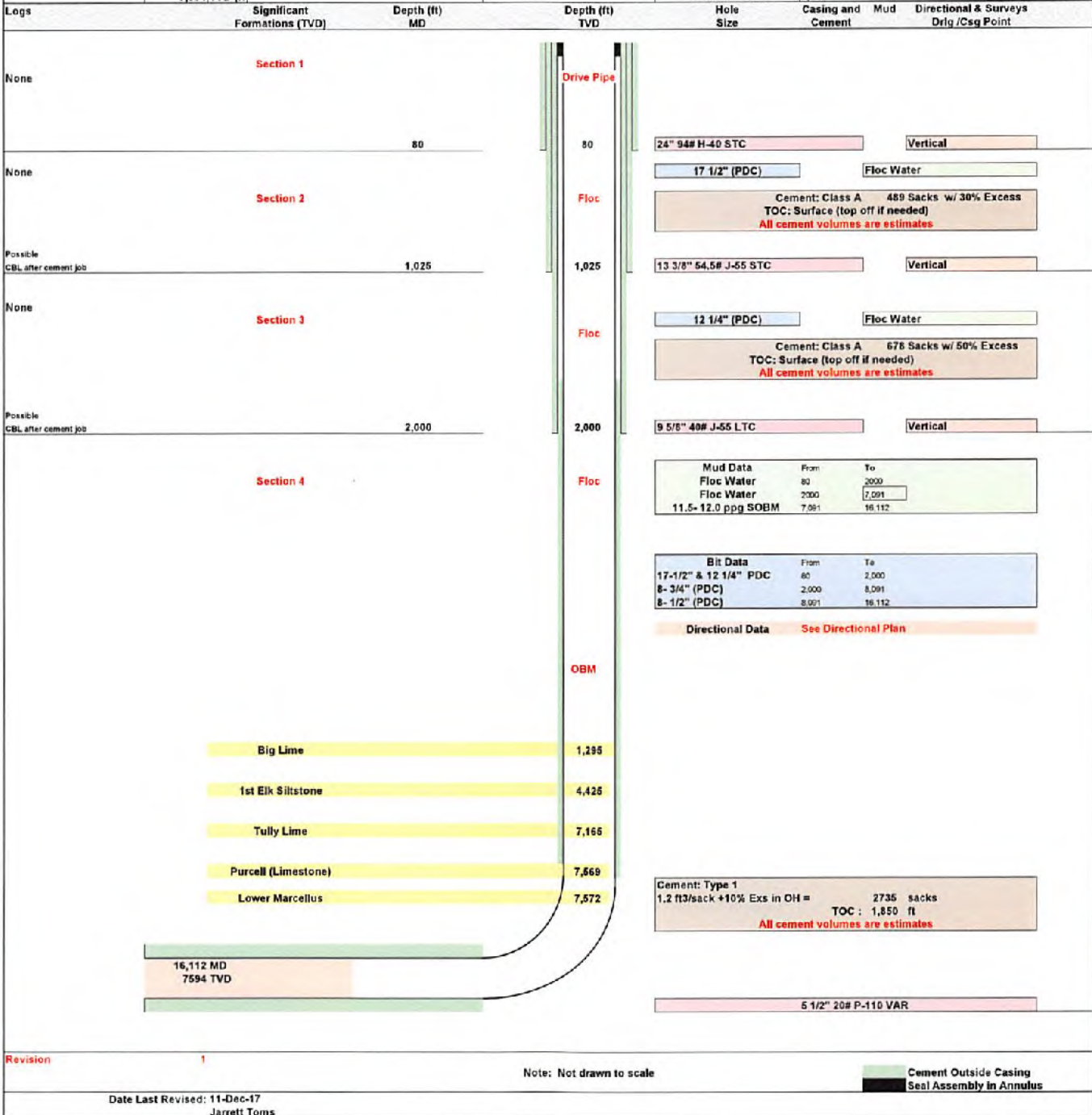
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Arsenal Resources  
 Howdershell BCH 205  
 Casing Design  
 Directional Plan # 1 QES

Other Names:	N/A
Surface Location:	TBD
Bottom Hole Location:	TBD
Total Depth:	16,112 MD (ft) 7,594 TVD (ft)

County:	Barbour
State:	West Virginia
AFE #:	XX
RKB:	27
Ground Level:	1,568



Revision 1

Note: Not drawn to scale

Cement Outside Casing Seal Assembly in Annulus

Date Last Revised: 11-Dec-17  
 Jarrett Toms

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## Purpose

The purpose of this pad-specific Hydraulic Fracturing Monitoring Plan is to identify and notify conventional well operators near Arsenal Resources hydraulic fracturing in Barbour County, WV prior to hydraulic fracturing at the following ARSENAL RESOURCES wells on the Howdershelt BCH 205 Pad.

Due to the apparent presence of unique geological conditions, the potential for communication between deep geologic zones exists in this area. This potential communication, via natural gas, water, or both, may occur between hydraulically fractured wells in the Marcellus formation (approximately 7,600' TVD) and existing conventional natural gas wells in the partially-depleted, relatively high permeability Haverly formation (approximately 5,700' TVD).

The plan is being implemented as an additional safety measure to be utilized in conjunction with best management practices and emergency action plans for this site. These additional measures include pre-notification of conventional well operators of the timing and location of the hydraulic fracturing, establishment of measures conventional well operators should implement, and assurance that the Division of Oil and Gas is notified of the timeline, as well as any issues that may arise during fracturing.

### 1. Communications with Conventional Operators.

ARSENAL RESOURCES, using available data (WV Geological Survey, WVDEP Website, and IHS data service), has identified all known conventional wells and well operators within 500 feet of this pad and the lateral sections. A map showing these wells along with a list of the wells and operators is included in Attachment A. Upon approval of this plan, ARSENAL RESOURCES will notify these operators, via letter, of the hydraulic fracturing schedule for these wells. A copy of this letter is included in Attachment B.

The letter provides recommendations to these conventional operators to 1) increase their monitoring of their wells during that time period, 2) ensure that their well head equipment is sound, and 3) provide immediate notification to ARSENAL RESOURCES and the OOG in the event of any changes in their well conditions.

Specifically, the letter recommends that conventional well operators conduct the following activities during and after fracturing operations:

1. Inspect their surface equipment prior to fracturing to establish integrity and establish pre-frac well conditions.
2. Observe wells closely during and after fracturing and monitor for abnormal increases in water, gas or pressure.
3. Inspect or install master valves rated to 3,000 psi or other necessary equipment for wellhead integrity.
4. Notify the OOG and ARSENAL RESOURCES if any changes in water, gas production, pressure or other anomalies are identified.

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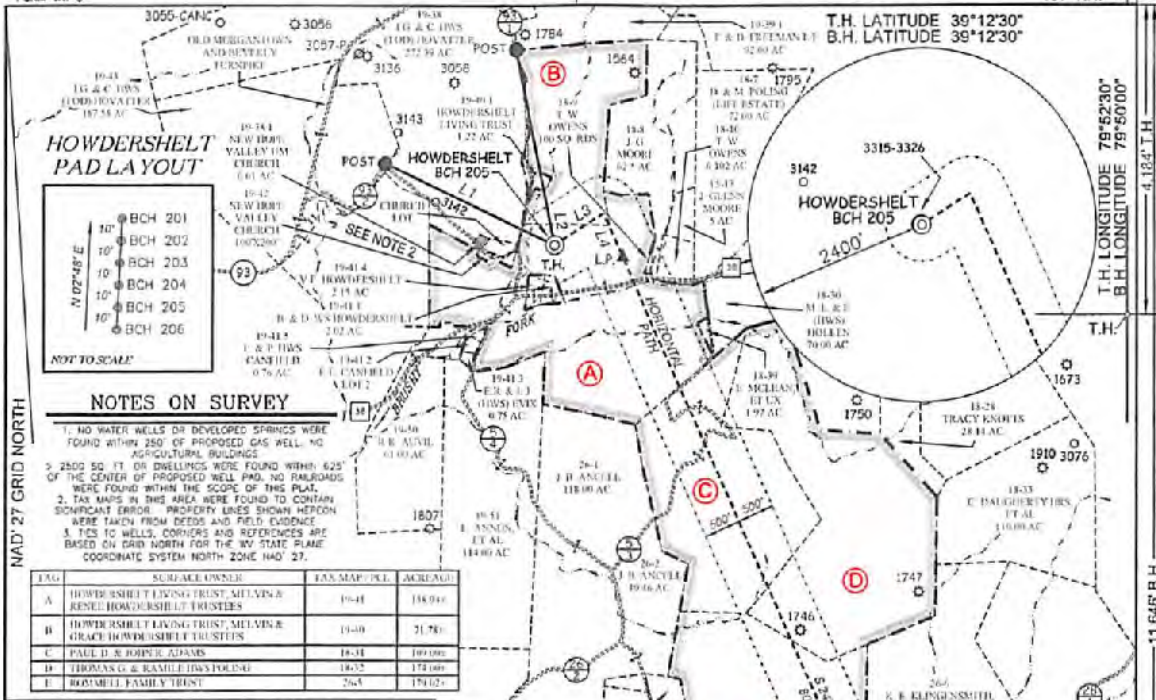
## 2. Reporting

ARSENAL RESOURCES will provide information relating to the hydraulic fracturing schedule, communication with conventional operators, and ongoing monitoring of the work upon request of OOG or immediately after any event of any noted abnormalities.

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**ARSENAL RESOURCES  
HOWDERSHETT BCH 205**

(S.P.C. NORTH ZONE) (UTM/M) ZONE 17 NORTH)

NAD83 S.P.C.(FT) N. 254,068.4 E. 1,862,149.0  
 NAD83 GEO. LAT-(N) 39.196944 LONG-(W) 79.875250  
 NAD83 UTM (M) N. 4,339,234.5 E. 597,124.0

**LANDING POINT**

NAD83 S.P.C.(FT) N. 253,910.2 E. 1,863,074.5  
 NAD83 GEO. LAT-(N) 39.196520 LONG-(W) 79.871090  
 NAD83 UTM (M) N. 4,339,191.0 E. 597,406.9

**BOTTOM HOLE**

NAD83 S.P.C.(FT) N. 246,500.4 E. 1,860,352.7  
 NAD83 GEO. LAT-(N) 39.176460 LONG-(W) 79.860320  
 NAD83 UTM (M) N. 4,336,977.4 E. 596,442.6

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**HOWDERSHETT BCH 205 WELL TIES**

LINE	BEARING	DISTANCE
L1	N 64°26' W	2572.53
L2	N 11°17' W	2712.20
L3	N 57°35' E	788.59
L4	S 24°07' E	820.55

**REFERENCES**

1" = 200'

MANHOLE LID IN TOP CONCRETE CISTERN

N 16°05' E 385.72'

S 41°02' W 317.41'

CORNER POST IN THIS FENCE

**LEGEND**

- LEASE LINE
- SURFACE LINE
- WELL LATERAL
- OFFSET LINE
- TIE LINE
- CREEK
- ROAD
- FENCE LINE
- COUNTY ROUTE
- STATE ROUTE
- PROPOSED WELL
- EXISTING WELL
- PERMITTED WELL
- LEASE TAG

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAN IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DIVISION OF ENVIRONMENTAL PROTECTION.

P.S. 677 *Gregory A. Smith*

**GREGORY A. SMITH**  
LICENSED  
No. 677  
STATE OF WEST VIRGINIA  
PROFESSIONAL SURVEYOR

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.  
 DATE DECEMBER 7, 2017  
 REVISED \_\_\_\_\_  
 OPERATORS WELL NO. HOWDERSHETT BCH 205  
 API WELL NO. 47  
 STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1/2500 FILE NO. 7962NP205.dwg  
 HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE 1" = 200'

STATE OF WEST VIRGINIA  
DIVISION OF ENVIRONMENTAL PROTECTION  
OFFICE OF OIL AND GAS

WELL TYPE: OIL \_\_\_ GAS  LIQUID WASTE IF "GAS" PRODUCTION  STORAGE \_\_\_ DEEP \_\_\_ SHALLOW

LOCATION: ELEVATION EXISTING: 1,552.47 / PROPOSED: 1,585 WATERSHED BRUSHY FORK  
 DISTRICT COVE COUNTY BARBOUR QUADRANGLE NESTORVILLE 7.5'

SURFACE OWNER HOWDERSHETT LIVING TRUST, MELVIN & RENEE HOWDERSHETT TRUSTEES ACREAGE 158.94±  
 ROYALTY OWNER HOWDERSHETT LIVING TRUST, MELVIN & RENEE HOWDERSHETT TRUSTEES, ET AL ACREAGE 158.94±

PROPOSED WORK: LEASE NO. \_\_\_\_\_

DRILL  CONVERT \_\_\_ DRILL DEEPER \_\_\_ REDRILL \_\_\_ FRACTURE OR STIMULATE  PLUG OFF OLD  
 FORMATION \_\_\_ PERFORATE NEW FORMATION \_\_\_ PLUG AND ABANDON \_\_\_ CLEAN OUT AND REPLUG \_\_\_ OTHER \_\_\_  
 PHYSICAL CHANGE IN WELL (SPECIFY) TARGET FORMATION MARCELLUS ESTIMATED DEPTH 16,112' TMD / 7,694' TVD

WELL OPERATOR ARSENAL RESOURCES DESIGNATED AGENT WILLIAM VEIGEL  
 ADDRESS 6031 WALLACE RD. EXT. SUITE 300 WEXFORD, PA 15090 ADDRESS 65 PROFESSIONAL PLACE BRIDGEPORT, WV 26330

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AOA ATTACHMENT "A"

Area of Review Report - Howdershell BCH Pad, 205 Lateral, Barbour County, WV

Well Name	API Number	Operator Name / Address	Well Type	Latitude	Longitude	Total Depth	Perforated Formation(s)	Producing Zones not Perforated
Harley O Poling et ux 1	001-01746	Commonwealth Energy, Inc	Vertical existing	39.182211	-79.862133	5619	Balltown, Alexander, Elk, Haverly	NA

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AOR ATTACHMENT "NA" 05/25/2018



**ARSENAL**  
R E S O U R C E S

People Powered. Asset Strong.

Click or tap to enter a date.

Commonwealth Energy, Inc

Address

State

RE: Click or tap here to enter text.

Dear Sir/Madam,

Arsenal Resources has developed a Marcellus pad Howdershelt BCH 205, located in Barbour County, WV. As an owner or operator of conventional natural gas wells in this area, we are requesting your assistance in this matter.

Due to the apparent presence of unique geological conditions, the potential for communication between deep geologic zones exists in this area. This potential communication, via natural gas, water, or both, may occur between hydraulically fractured wells in the Marcellus formation (approximately 7,600' TVD) and existing conventional natural gas wells included in the attached well list for which you are believed to be the operator.

Arsenal Resources anticipates conducting hydraulic fracturing at the Howdershelt BCH 205 Pad during the Quarter of 2018. We have identified conventional natural gas wells operated by your company within 500' (lateral distance) of our newly planned wells. Plats for each well on this pad are attached.

We recommend that conventional well operators conduct the following activities before, during and after fracturing operations:

1. Inspect surface equipment, prior to fracturing, to establish integrity and establish well conditions.
2. Observe wells closely during and after fracturing and monitor for abnormal increases in water, gas, or pressure.
3. Inspect or install master valves rated to 3,000 psi or other necessary equipment for wellhead integrity.
4. Notify the OOG and Arsenal Resources if any changes in water, gas production, pressure or other anomalies are identified.

Please feel free to contact me at 724-940-1218 with any questions or comments. You may also contact the WV Office of Oil and Gas at 304-926-0440.

Sincerely,

Kelly Daviw  
Permitting Specialist

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AOR ATTACHMENT "B"

WW-9  
(4/16)

API Number 47 - \_\_\_\_\_ - \_\_\_\_\_

Operator's Well No. Howdarsheft BCH 205

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
OFFICE OF OIL AND GAS

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Arsenal Resources OP Code 494519412

Watershed (HUC 10) Brushy Fork Quadrangle Nestorville

Do you anticipate using more than 5,000 bbls of water to complete the proposed well work? Yes  No

Will a pit be used? Yes  No

If so, please describe anticipated pit waste: \_\_\_\_\_

Will a synthetic liner be used in the pit? Yes  No  If so, what ml.? \_\_\_\_\_

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection ( UIC Permit Number \_\_\_\_\_ )
- Reuse (at API Number \_\_\_\_\_ )
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain \_\_\_\_\_)

Will closed loop system be used? If so, describe: Yes, the closed loop system will contain all of the drilling medium and drill cuttings on location and then be taken to landfill.

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. Vertical: Freshwater, Horizontal: Oil based mud

-If oil based, what type? Synthetic, petroleum, etc. Synthetic

Additives to be used in drilling medium? Bentonite, Soap & Polymer sticks, Soda Ash, Sodium Bicarbonate, Defoamer, Base Oil, Emulsifiers, Lime Bartite

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. Landfill

-If left in pit and plan to solidify what medium will be used? (cement, lime, sawdust) N/A

-Landfill or offsite name/permit number? Advanced Disposal Services & Chestnut Valley Landfill

Permittee shall provide written notice to the Office of Oil and Gas of any load of drill cuttings or associated waste rejected at any West Virginia solid waste facility. The notice shall be provided within 24 hours of rejection and the permittee shall also disclose where it was properly disposed.

I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2005, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations of any term or condition of the general permit and/or other applicable law or regulation can lead to enforcement action.

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this application form and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment.

Company Official Signature *William Veigel*  
Company Official (Typed Name) William Veigel  
Company Official Title Designated Agent

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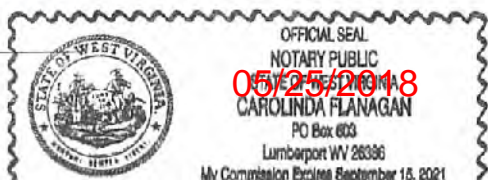
JAN 24 2018

WV Department of  
Environmental Protection

Subscribed and sworn before me this 13th day of December, 2017

*Carolinda Flanagan* Notary Public

My commission expires 9/15/2021



**Arsenal Resources**

Proposed Revegetation Treatment: Acres Disturbed 10.9 Prevegetation pH 6.8 Average

Lime 2.67 Tons/acre or to correct to pH 6.4

Fertilizer type 10-20-20

Fertilizer amount 1000 lbs/acre

Mulch 3-4 Tons/acre

**Seed Mixtures**

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
Orchard Grass	129	Orchard Grass	129
Rye	93	Rye	93
Clover	24	Clover	24
Timothy	45	Timothy	45

**Attach:**

Maps(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided). If water from the pit will be land applied, include dimensions (L x W x D) of the pit, and dimensions (L x W), and area in acreage, of the land application area.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: *Ernest C. [Signature]*

Comments: Re-seed and mulch all disturbed areas as soon as reasonably possible per regulation. Upgrade erosion and sediment control measures where needed per the West Virginia Erosion and Sediment Control Field Manual.

Title: OIL & GAS INSPECTION

Date: 12-13-17

Field Reviewed?  Yes  No

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JAN 24 2018  
WV Department of  
Environmental Protection



# SITE SAFETY PLAN

## Howdershelt BCH #205 WELL PAD

**911 Address:**

WV State Route 38

*Ernest L. Reynolds*  
12-13-17

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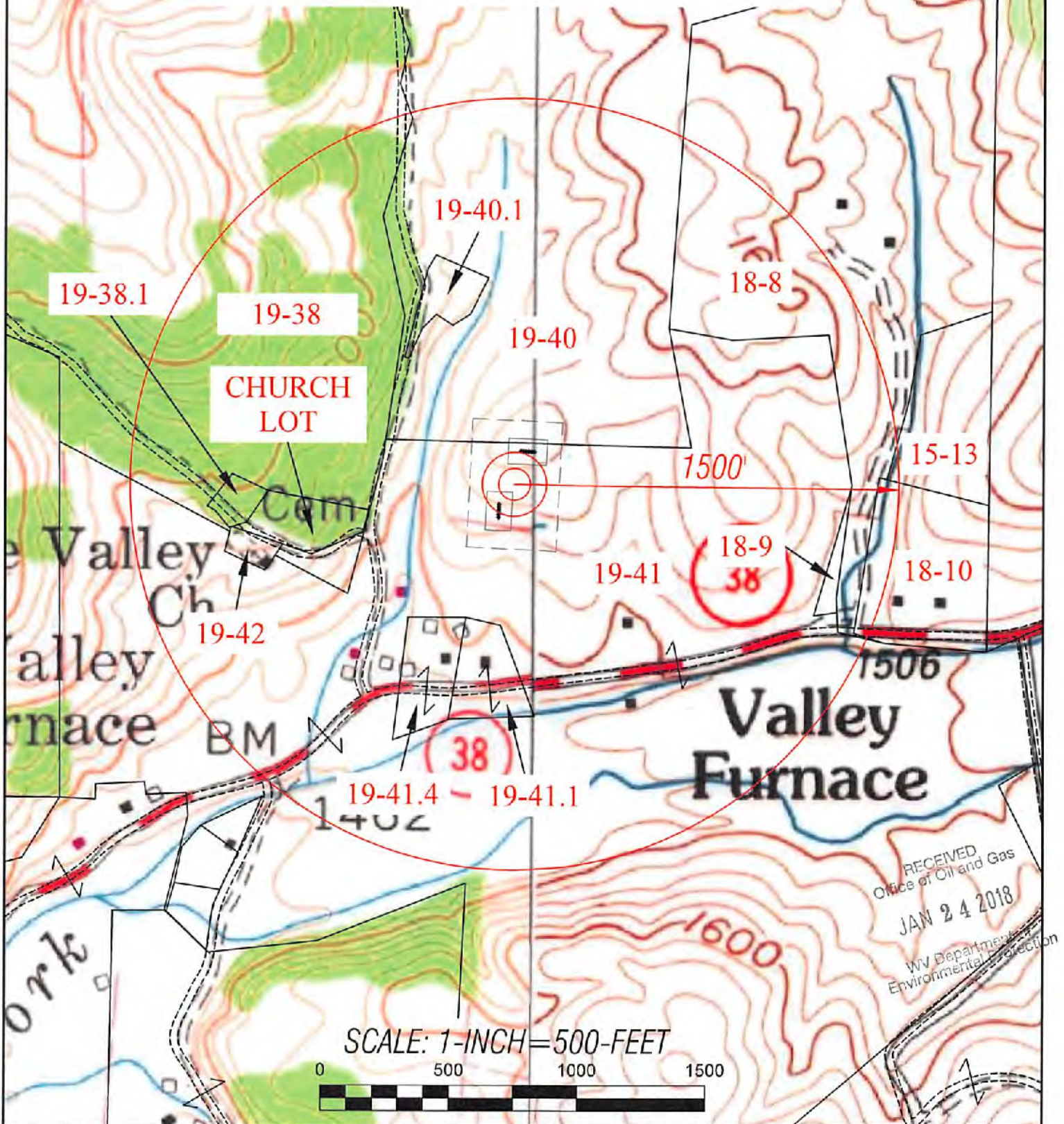
JAN 24 2018


WV Department of  
Environmental Protection

05/25/2018

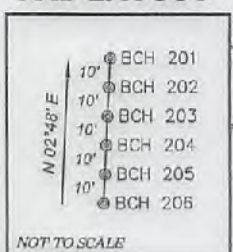


# HOWDERSHELT PAD POSSIBLE WATER PURVEYORS



				TOPO SECTIONS OF: COLEBANK & NESTORVILLE WV 7.5' QUADRANGLE		OPERATOR: ARSENAL RESOURCES 65 Professional Place, Suite 200 Bridgeport, WV 26330	
				COUNTY	DISTRICT	05/25/2018	
DRAWN BY K.G.M.	FILE NO. 8506	DATE 12-11-17	CADD FILE: TOPWATERPURYEVOR.DWG	BARBOUR	COVE		

### HOWERSHETT PAD LAYOUT



### NOTES ON SURVEY

1. NO WATER WELLS OR DEVELOPED SPRINGS WERE FOUND WITHIN 250' OF PROPOSED WELL PAD. NO AGRICULTURAL BUILDINGS > 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD. NO RAILROADS WERE FOUND WITHIN THE SCOPE OF THIS PLAT.
2. TAX MAPS IN THIS AREA WERE FOUND TO CONTAIN SIGNIFICANT ERROR. PROPERTY LINES SHOWN HEREON WERE TAKEN FROM DEEDS AND FIELD EVIDENCE.
3. TIES TO WELLS, CORNERS AND REFERENCES ARE BASED ON GRID NORTH FOR THE WV STATE PLANE COORDINATE SYSTEM NORTH ZONE NAD' 27.

TAG	SURFACE OWNER	TAX MAP / PCL	ACREAGE
A	HOWERSHETT LIVING TRUST, MELVIN & RENEE HOWERSHETT TRUSTEES	19-41	158.94±
B	HOWERSHETT LIVING TRUST, MELVIN & GRACE HOWERSHETT TRUSTEES	19-40	71.78±
C	PAUL D. & JOHN R. ADAMS	18-31	109.00±
D	THOMAS G. & RAMILE HWS POLING	18-32	174.00±
E	ROMMELL FAMILY TRUST	26-5	179.02±

### ARSENAL RESOURCES HOWERSHETT BCH 205

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)

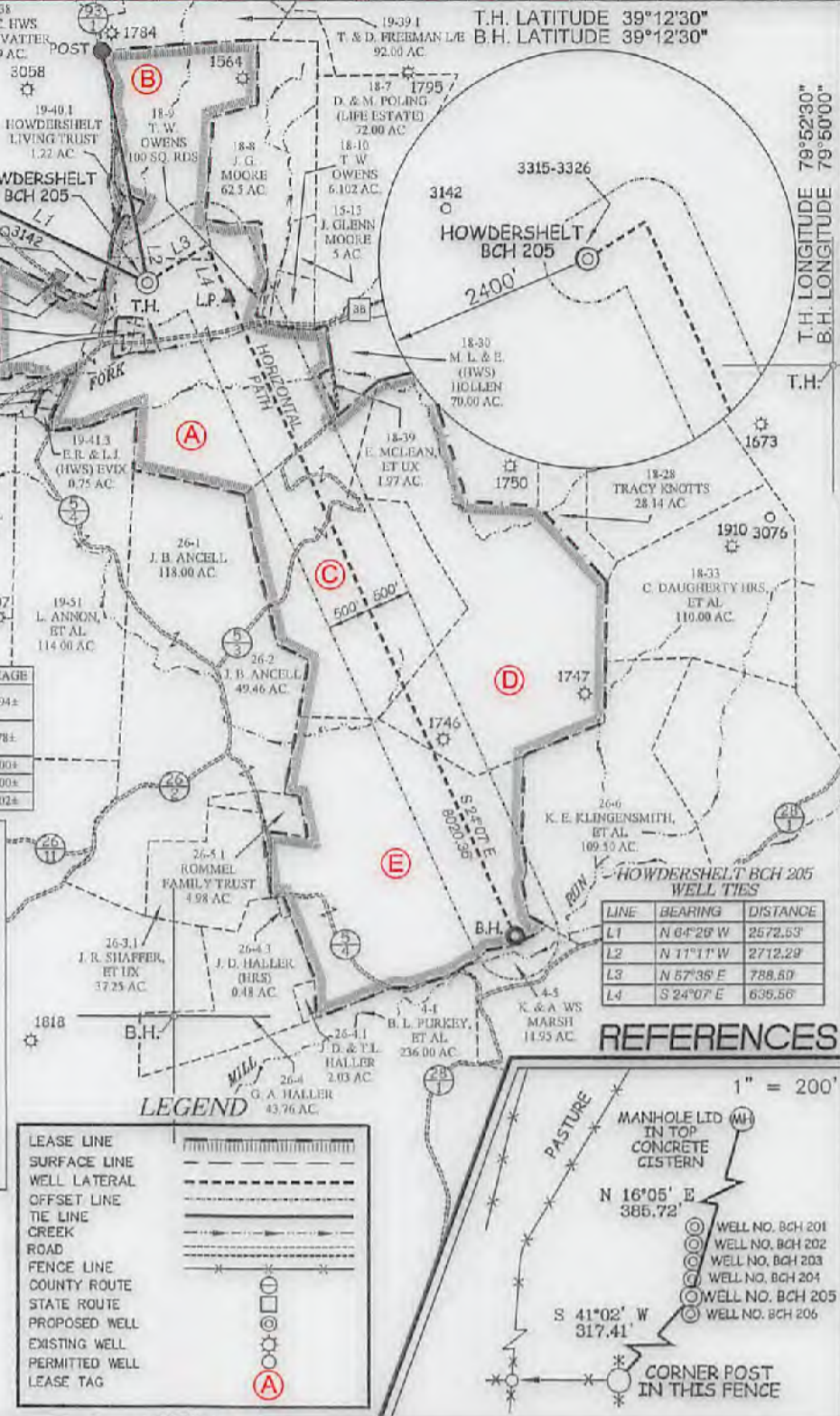
NAD'83 S.P.C.(FT) N. 254,068.4 E. 1,862,148.8  
 NAD'83 GEO. LAT-(N) 39.196944 LONG-(W) 79.875259  
 NAD'83 UTM (M) N. 4,389,234.5 E. 597,124.0

#### LANDING POINT

NAD'83 S.P.C.(FT) N. 253,910.2 E. 1,863,074.6  
 NAD'83 GEO. LAT-(N) 39.196520 LONG-(W) 79.871990  
 NAD'83 UTM (M) N. 4,389,191.0 E. 597,406.9

#### BOTTOM HOLE

NAD'83 S.P.C.(FT) N. 246,590.4 E. 1,866,352.7  
 NAD'83 GEO. LAT-(N) 39.176460 LONG-(W) 79.860320  
 NAD'83 UTM (M) N. 4,336,977.4 E. 598,442.6



LINE	BEARING	DISTANCE
L1	N 64°20' W	2572.53'
L2	N 11°11' W	2712.29'
L3	N 57°36' E	788.60'
L4	S 24°07' E	636.56'

### REFERENCES

#### LEGEND

- LEASE LINE
- SURFACE LINE
- WELL LATERAL
- OFFSET LINE
- TIE LINE
- CREEK
- ROAD
- FENCE LINE
- COUNTY ROUTE
- STATE ROUTE
- PROPOSED WELL
- EXISTING WELL
- PERMITTED WELL
- LEASE TAG

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www.slsurveys.com

I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DIVISION OF ENVIRONMENTAL PROTECTION.

P.S. 677 Gregory A. Smith

GREGORY A. SMITH  
LICENSED  
No. 677  
STATE OF WEST VIRGINIA  
PROFESSIONAL SURVEYOR

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.  
 DATE DECEMBER 7, 20 17  
 REVISED \_\_\_\_\_  
 OPERATORS WELL NO. HOWERSHETT BCH 205  
 API WELL NO. 47-001-03359  
 STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 7962NP205.dwg  
 HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE 1" = 2000'

STATE OF WEST VIRGINIA  
DIVISION OF ENVIRONMENTAL PROTECTION  
OFFICE OF OIL AND GAS

WELL TYPE: OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL  IF "GAS" PRODUCTION  STORAGE  DEEP  SHALLOW

LOCATION: ELEVATION EXISTING: 1,552.40' / PROPOSED: 1,555' WATERSHED BRUSHY FORK  
 DISTRICT COVE COUNTY BARBOUR QUADRANGLE NESTORVILLE 7.5'

SURFACE OWNER HOWERSHETT LIVING TRUST, MELVIN & RENEE HOWERSHETT TRUSTEES ACREAGE 158.94±  
 ROYALTY OWNER HOWERSHETT LIVING TRUST, MELVIN & RENEE HOWERSHETT TRUSTEES, ET AL ACREAGE 158.94±

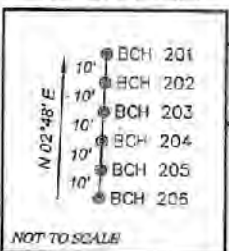
PROPOSED WORK: DRILL  CONVERT  DRILL DEEPER  REDRILL  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  PERFORATE NEW FORMATION  PLUG AND ABANDON  CLEAN OUT AND REPLUG  OTHER \_\_\_\_\_  
 PHYSICAL CHANGE IN WELL (SPECIFY) \_\_\_\_\_ TARGET FORMATION MARCELLUS  
 ESTIMATED DEPTH 15,112' TMD / 7,594' TVD

WELL OPERATOR ARSENAL RESOURCES DESIGNATED AGENT WILLIAM VEIGEL  
 ADDRESS 6031 WALLACE RD. EXT. SUITE 300 WEXFORD, PA 15090 ADDRESS 65 PROFESSIONAL PLACE BRIDGEPORT, WV 26330

05/25/2018

COUNTY NAME PERMIT

**HOWDERSHOLT PAD LAYOUT**



**NOTES ON SURVEY**

- NO WATER WELLS OR DEVELOPED SPRINGS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL NO AGRICULTURAL BUILDINGS
- 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD. NO RAILROADS WERE FOUND WITHIN THE SCOPE OF THIS PLAT.
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**ARSENAL RESOURCES  
HOWDERSHOLT BCH 205**

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)

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**LANDING POINT**

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**BOTTOM HOLE**

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I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DIVISION OF ENVIRONMENTAL PROTECTION.

P.S. 677 *Gregory A. Smith*



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.  
 DATE DECEMBER 7, 20 17

REVISED \_\_\_\_\_  
 OPERATORS WELL NO. HOWDERSHOLT BCH 205

API WELL NO. 47-001-03359  
 STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1/2500 FILE NO. 7962NP205.dwg  
 HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE 1" = 2000'

STATE OF WEST VIRGINIA  
 DIVISION OF ENVIRONMENTAL PROTECTION  
 OFFICE OF OIL AND GAS



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PROPOSED WORK: LEASE NO. \_\_\_\_\_

DRILL  CONVERT  DRILL DEEPER  REDRILL  FRACTURE OR STIMULATE  PLUG OFF OLD

FORMATION  PERFORATE NEW FORMATION  PLUG AND ABANDON  CLEAN OUT AND REPLUG  OTHER \_\_\_\_\_

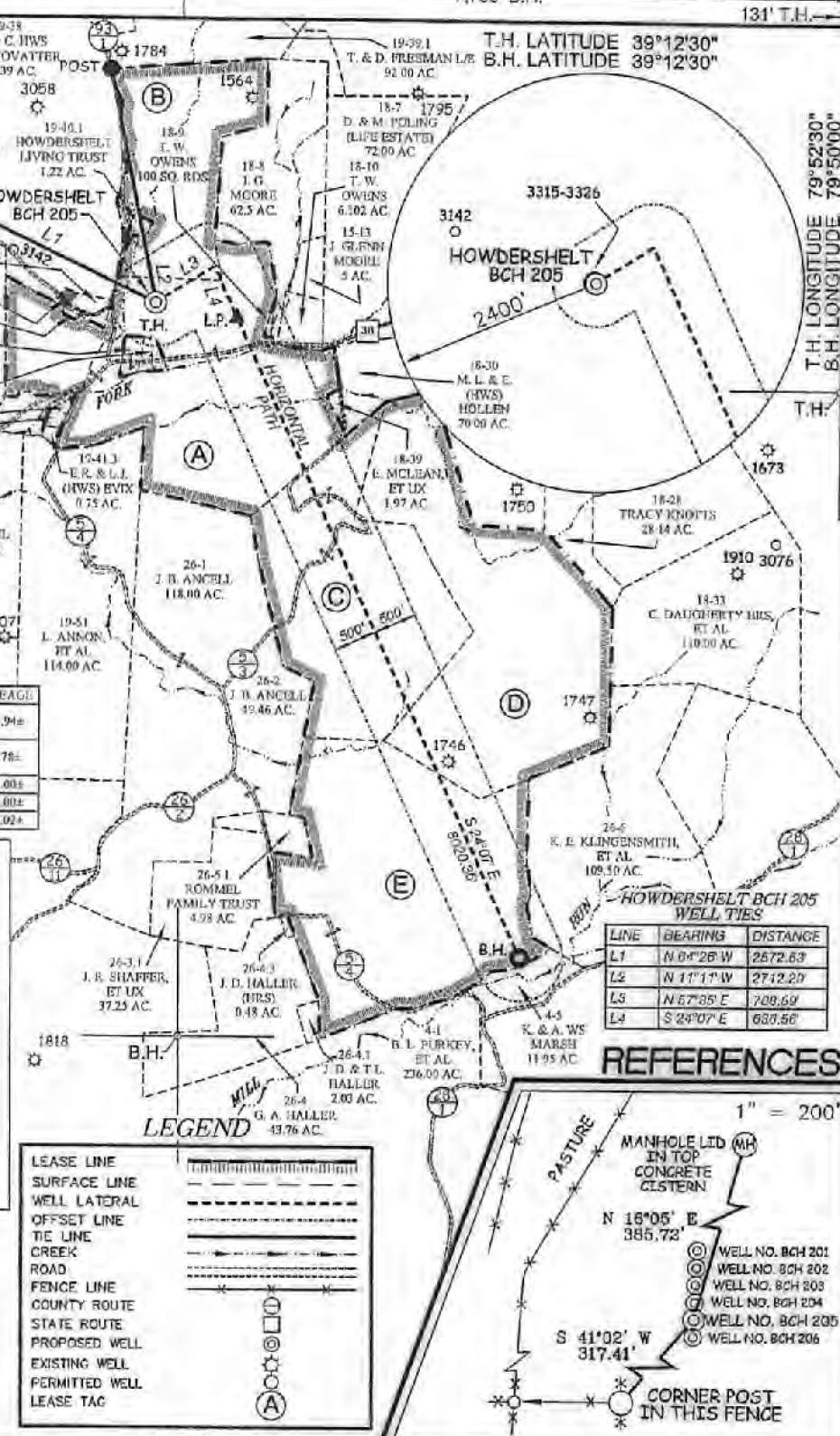
PHYSICAL CHANGE IN WELL (SPECIFY) \_\_\_\_\_ TARGET FORMATION MARCELLUS

ESTIMATED DEPTH 16,112' TMD / 7,594' TVD

WELL OPERATOR ARSENAL RESOURCES DESIGNATED AGENT WILLIAM VEIGEL

ADDRESS 6031 WALLACE RD. EXT. SUITE 300 ADDRESS 65 PROFESSIONAL PLACE

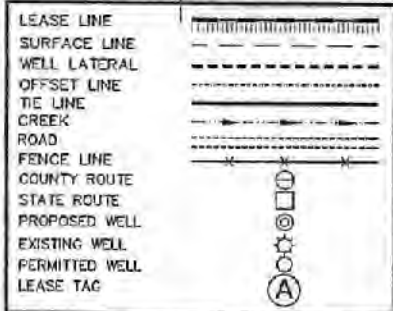
WEXFORD, PA 15090 BRIDGEPORT, WV 26330



**HOWDERSHOLT BCH 205 WELL TIES**

LINE	BEARING	DISTANCE
L1	N 04°26' W	2572.63
L2	N 11°11' W	2742.20
L3	N 67°38' E	788.69
L4	S 24°07' E	688.66

**LEGEND**



**REFERENCES**



COUNTY NAME PERMIT

WW-6A1  
(5/13)

Operator's Well No. Howdershelt BCH 205

**INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE  
Chapter 22, Article 6A, Section 5(a)(5)  
IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)**

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that –

- (1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
----------------------	-----------------------	-----------------------	---------	-----------

See Attached


**Acknowledgement of Possible Permitting/Approval  
In Addition to the Office of Oil and Gas**

The permit applicant for the proposed well work addressed in this application hereby acknowledges the possibility of the need for permits and/or approvals from local, state, or federal entities in addition to the DEP Office of Oil and Gas, including but not limited to the following:

- WV Division of Water and Waste Management
- WV Division of Natural Resources WV Division of Highways
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- County Floodplain Coordinator

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The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity is initiated.

Well Operator: Arsenal Resources  
By: William Veigel   
Its: Designated Agent

Attachment to WW-6A1, Howdershelt BCH 205

Letter Designation/Number Designation on Plat	Grantor, Lessor, Assignor, etc.	Grantee, Lessee, Assignee, etc.	Royalty	Book/Page	Acreage
A/B	Melvin Howdershelt and Grace Renee Howdershelt	R.P. Land Company, LLC	0.18	160/272	233.96
	R.P. Land Company, LLC	Mar Key, LLC		157/100	
C	John R. Adams and Martha V. Adams, husband and wife	Mar Key, LLC	0.15	161/115	109.0012875
	Paul D. Adams, single	Mar Key, LLC		161/113	
D	Thomas G. Poling	Commonwealth Energy, Inc.	0.125	138/417	174
	Commonwealth Energy, Inc.	Mar Key, LLC		161/248	
E	Rommel Family Trust, c/o Sandra J. Rommel, Trustee	R.P. Land Company, LLC	0.18	160/100	172.02
	R.P. Land Company, LLC	Mar Key, LLC		157/100	

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**Agreement to Drill, Complete and Operate Oil & Gas Wells**

This Agreement to Drill, Complete and Operate Oil & Gas Wells (this "Agreement"), by and among Mountaineer Keystone LLC, a West Virginia limited liability company ("Mountaineer Keystone"), PDC Mountaineer, LLC, a Delaware limited liability company ("PDC"), and PDC Mountaineer Holdings, LLC, a Delaware limited liability company ("PDC Holdings"), is effective as of October 15, 2014. (the "Effective Date") and sets forth the terms pursuant to which Mountaineer Keystone will drill, complete and operate the Wells (as defined below) on behalf of PDC and PDC Holdings. Mountaineer Keystone, PDC, and PDC Holdings are each a "Party" and are collectively the "Parties". In consideration of the foregoing and the respective agreements hereinafter set forth and the mutual benefits to be derived therefrom, the Parties, intending to be legally bound, hereby agree as follows:

1. **Term:** This Agreement is effective from the Effective Date until terminated by Mountaineer Keystone on the one hand or PDC and PDC Holdings on the other hand with 30 days' written notice to the other Party or Parties, as applicable (the "Term").
2. **Authorization to Operate:** PDC and PDC Holdings authorize Mountaineer Keystone to undertake and perform, on PDC and PDC Holdings behalf, all operations, including without limitation permit applications, well pad preparation, drilling and completing wells, and marketing gas, oil and other hydrocarbons therefrom with respect to all oil and gas wells to be drilled on oil and gas leasehold acreage held by PDC or PDC Holdings. PDC, PDC Holdings and Mountaineer Keystone are affiliates with a common parent. Mountaineer Keystone was formed to operate oil and gas leasehold acreage held by PDC, PDC Holdings and certain other affiliates. Mountaineer Keystone agrees that it shall, in a good and workmanlike manner and in accordance with industry standards as they prevail in the area, drill, complete and operate oil and gas wells on leasehold acreage owned by PDC or PDC Holdings from time to time as directed by PDC or PDC Holdings (collectively, the "Wells").
3. **No Third Party Beneficiary:** This Agreement is for the benefit of the Parties and is not for the benefit of any third party.
4. **Counterparts:** This Agreement may be simultaneously executed in several counterparts and via facsimile or similar electronic transmittal, each of which shall be deemed to be an original and taken together shall constitute one and the same instrument.


[Signature Page Follows]

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Environmental Protection


05/25/2018

IN WITNESS WHEREOF, Mountaineer Keystone, PDC, and PDC Holdings have caused their duly authorized representatives to execute this Agreement as of the Effective Date.


**MOUNTAINEER KEYSTONE LLC**

By:   
Name: Robert Kessel  
Title: CEO

**PDC MOUNTAINEER, LLC**

By:   
Name: Robert Kessel  
Title: CEO

**PDC MOUNTAINEER HOLDINGS, LLC**

By:   
Name: Robert Kessel  
Title: CEO

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**Agreement to Drill, Complete and Operate Oil & Gas Wells**

This Agreement to Drill, Complete and Operate Oil & Gas Wells (this "Agreement"), by and among Arsenal Resources LLC, a West Virginia limited liability company ("Arsenal"), River Ridge Energy, LLC, a Delaware limited liability company ("River Ridge"), and River Ridge Energy, Holdings, LLC, a Delaware limited liability company ("River Ridge Holdings"), is effective as of March 1, 2017. (the "Effective Date") and sets forth the terms pursuant to which Arsenal will drill, complete and operate the Wells (as defined below) on behalf of River Ridge and River Ridge Holdings. Arsenal, River Ridge, and River Ridge Holdings are each a "Party" and are collectively the "Parties". In consideration of the foregoing and the respective agreements hereinafter set forth and the mutual benefits to be derived therefrom, the Parties, intending to be legally bound, hereby agree as follows:

1. **Term:** This Agreement is effective from the Effective Date until terminated by Arsenal on the one hand or River Ridge and River Ridge Holdings on the other hand with 30 days' written notice to the other Party or Parties, as applicable (the "Term").
2. **Authorization to Operate:** River Ridge and River Holdings authorize Arsenal to undertake and perform, on River Ridge and River Ridge Holdings behalf, all operations, including without limitation permit applications, well pad preparation, drilling and completing wells, and marketing gas, oil and other hydrocarbons therefrom with respect to all oil and gas wells to be drilled on oil and gas leasehold acreage held by River Ridge or River Ridge Holdings. River Ridge, River Ridge Holdings and Arsenal are affiliates with a common parent. Arsenal was formed to operate oil and gas leasehold acreage held by River Ridge, River Ridge Holdings and certain other affiliates. Arsenal agrees that it shall, in a good and workmanlike manner and in accordance with industry standards as they prevail in the area, drill, complete and operate oil and gas wells on leasehold acreage owned by River Ridge or River Ridge Holdings from time to time as directed by River Ridge or River Ridge Holdings (collectively, the "Wells").
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[Signature Page Follows]

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05/25/2018



IN WITNESS WHEREOF, Arsenal, River Ridge, and River Ridge Holdings have caused their duly authorized representatives to execute this Agreement as of the Effective Date.

**ARSENAL RESOURCES LLC**

By: Joel E. Symonds  
Name: Joel E. Symonds  
Title: Vice President - Land

**RIVER RIDGE ENERGY, LLC**

By: Joel E. Symonds  
Name: Joel E. Symonds  
Title: Vice President - Land

**RIVER RIDGE HOLDINGS, LLC**

By: Joel E. Symonds  
Name: Joel E. Symonds  
Title: Vice President - Land

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**West Virginia Secretary of State — Online Data Services**

**Business and Licensing**

Online Data Services Help

**Business Organization Detail**

*NOTICE: The West Virginia Secretary of State's Office makes every reasonable effort to ensure the accuracy of information. However, we make no representation or warranty as to the correctness or completeness of the information. If information is missing from this page, it is not in the The West Virginia Secretary of State's database.*

**MAR KEY LLC**

<b>Organization Information</b>								
Org Type	Effective Date	Established Date	Filing Date	Charter	Class	Sec Type	Termination Date	Termination Reason
LLC   Limited Liability Company	7/11/2011		7/11/2011	Domestic	Profit			

<b>Organization Information</b>			
<b>Business Purpose</b>	2111 - Mining, Quarrying, Oil & Gas Extraction - Oil and Gas Extraction - Crude Oil and Natural Gas Extraction		<b>Capital Stock</b>
<b>Charter County</b>		<b>Control Number</b>	99Q1F
<b>Charter State</b>	WV	<b>Excess Acres</b>	
<b>At Will Term</b>	A	<b>Member Managed</b>	MBR
<b>At Will Term Years</b>		<b>Par Value</b>	

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Environmental Protection

05/25/2018

<b>Authorized Shares</b>

<b>Addresses</b>	
<b>Type</b>	<b>Address</b>
<b>Designated Office Address</b>	65 PROFESSIONAL PLACE SUITE 200 BRIDGEPORT, WV, 26330
<b>Mailing Address</b>	6031 WALLACE ROAD EXTENSION SUITE 300 WEXFORD, PA, 15090 USA
<b>Notice of Process Address</b>	CORPORATION SERVICE COMPANY 209 WEST WASHINGTON STREET CHARLESTON, WV, 25302
<b>Principal Office Address</b>	6031 WALLACE ROAD EXTENSION SUITE 300 WEXFORD, PA, 15090 USA
<b>Type</b>	<b>Address</b>

<b>Officers</b>	
<b>Type</b>	<b>Name/Address</b>
<b>Member</b>	ARSENAL RESOURCES ENERGY LLC 6031 WALLACE ROAD EXTENSION SUITE 300 WEXFORD, PA, 15090
<b>Organizer</b>	PAUL M HERZING 560 EPSILON DR. PITTSBURGH, PA, 15238 USA
<b>Type</b>	<b>Name/Address</b>

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WV Department of  
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<b>Annual Reports</b>
<b>Date filed</b>

05/25/2018

3/30/2017
6/20/2016
6/30/2015
4/28/2014
6/28/2013
5/8/2012
<b>Date filed</b>

For more information, please contact the Secretary of State's Office at 304-558-8000.

Tuesday, November 28, 2017 — 9:44 AM

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JAN 24 2018  
WV Department of  
Environmental Protection

05/25/2018



People Powered. Asset Strong.

December 14, 2017

Mr. James Martin, Chief of Oil and Gas  
West Virginia Department of Environmental Protection  
601 57th Street, SE  
Charleston, WV 25304

RE: Ownership of Roadways; Howdershelt Pad

Dear Mr. Martin:

In preparation of filing a permit application for the above referenced well, the Title Department of Arsenal Resources has conducted a thorough title examination in order to determine the ownership of the oil and gas underlying all roadways crossed by the proposed wells. The findings of the title examination show that some of the roadways crossed by the proposed wells are owned in fee by the West Virginia Department of Transportation, Division of Highways and that some are only right of ways. If owned in fee by the West Virginia Department of Transportation, Division of Highways, a lease covering its interest in the roadway or roadways has been properly obtained and provided in the application materials. If a right of way only, the oil and gas underlying such roadway or roadways is owned by the adjoining landowners and is also covered by the leaseholds provided in the application materials.

If you have any questions, concerns or need further information, please do not hesitate to contact me at the address listed below.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Ryan Brode'.

Ryan Brode  
Title Attorney

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JAN 24 2018

6031 Wallace Road Ext, Suite 300  
Wexford, PA 15090  
P: 724-940-1100  
F: 800-428-0981  
www.arsenalresources.com

WV Department of  
Environmental Protection

05/25/2018

**STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
NOTICE CERTIFICATION**

Date of Notice Certification: 12-15-17

API No. 47- \_\_\_\_\_ - \_\_\_\_\_  
Operator's Well No. Howdershelt BCH 205  
Well Pad Name: Howdershelt BCH

**Notice has been given:**

Pursuant to the provisions in West Virginia Code § 22-6A, the Operator has provided the required parties with the Notice Forms listed below for the tract of land as follows:

State: <u>West Virginia</u>	UTM NAD 83 Easting: <u>597124.0</u>
County: <u>Barbour</u>	Northing: <u>4339234.5</u>
District: <u>Cove</u>	Public Road Access: <u>CR 38</u>
Quadrangle: <u>Nestorville</u>	Generally used farm name: <u>Howdershelt</u>
Watershed: <u>Brushy Fork</u>	

Pursuant to West Virginia Code § 22-6A-7(b), every permit application filed under this section shall be on a form as may be prescribed by the secretary, shall be verified and shall contain the following information: (14) A certification from the operator that (i) it has provided the owners of the surface described in subdivisions (1), (2) and (4), subsection (b), section ten of this article, the information required by subsections (b) and (c), section sixteen of this article; (ii) that the requirement was deemed satisfied as a result of giving the surface owner notice of entry to survey pursuant to subsection (a), section ten of this article six-a; or (iii) the notice requirements of subsection (b), section sixteen of this article were waived in writing by the surface owner; and Pursuant to West Virginia Code § 22-6A-11(b), the applicant shall tender proof of and certify to the secretary that the notice requirements of section ten of this article have been completed by the applicant.

Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following:

\*PLEASE CHECK ALL THAT APPLY

- 1. NOTICE OF SEISMIC ACTIVITY or  NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED
- 2. NOTICE OF ENTRY FOR PLAT SURVEY or  NO PLAT SURVEY WAS CONDUCTED
- 3. NOTICE OF INTENT TO DRILL or  NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or  WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)
- 4. NOTICE OF PLANNED OPERATION
- 5. PUBLIC NOTICE
- 6. NOTICE OF APPLICATION

**OOG OFFICE USE ONLY**

- RECEIVED/ NOT REQUIRED
- RECEIVED
- RECEIVED/ NOT REQUIRED
- RECEIVED
- RECEIVED
- RECEIVED

**Required Attachments:**

The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication date verification or the associated Affidavit of Publication. The attached Notice Forms and Certifications of Notice shall serve as proof that the required parties have been noticed as required under West Virginia Code § 22-6A. Pursuant to West Virginia Code § 22-6A-11(b), the Certification of Notice to the person may be made by affidavit of personal service, the return receipt card or other postal receipt for certified mailing.

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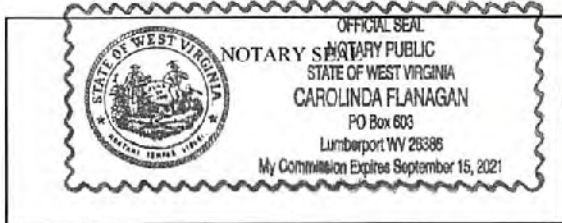
4700 103359

WW-6AC  
(1/12)

**Certification of Notice is hereby given:**

THEREFORE, I William Veigel, have read and understand the notice requirements within West Virginia Code § 22-6A. I certify that as required under West Virginia Code § 22-6A, I have served the attached copies of the Notice Forms, identified above, to the required parties through personal service, by registered mail or by any method of delivery that requires a receipt or signature confirmation. I certify under penalty of law that I have personally examined and am familiar with the information submitted in this Notice Certification and all attachments, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Well Operator:	<u>Arsenal Resources</u>	Address:	<u>6031 Wallace Road Extension, Suite 300</u>
By:	<u>William Veigel</u> <i>[Signature]</i>		<u>Wexford, PA 15090</u>
Its:	<u>Designated Agent</u>	Facsimile:	<u>304-848-9134</u>
Telephone:	<u>724-940-1218</u>	Email:	<u>kdavis@arsenalresources.com</u>



Subscribed and sworn before me this 15<sup>th</sup> day of December, 2017

Carolinda Flanagan Notary Public

My Commission Expires 9/15/2021

**Oil and Gas Privacy Notice:**

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at [depprivacyofficer@wv.gov](mailto:depprivacyofficer@wv.gov).

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4700103359

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
NOTICE OF APPLICATION

Notice Time Requirement: notice shall be provided no later than the filing date of permit application.

Date of Notice: 12-15-17 Date Permit Application Filed: 1-23-18

Notice of:

- PERMIT FOR ANY WELL WORK
- CERTIFICATE OF APPROVAL FOR THE CONSTRUCTION OF AN IMPOUNDMENT OR PIT

Delivery method pursuant to West Virginia Code § 22-6A-10(b)

- PERSONAL SERVICE
- REGISTERED MAIL
- METHOD OF DELIVERY THAT REQUIRES A RECEIPT OR SIGNATURE CONFIRMATION

Pursuant to W. Va. Code § 22-6A-10(b) no later than the filing date of the application, the applicant for a permit for any well work or for a certificate of approval for the construction of an impoundment or pit as required by this article shall deliver, by personal service or by registered mail or by any method of delivery that requires a receipt or signature confirmation, copies of the application, the erosion and sediment control plan required by section seven of this article, and the well plat to each of the following persons: (1) The owners of record of the surface of the tract on which the well is or is proposed to be located; (2) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for roads or other land disturbance as described in the erosion and sediment control plan submitted pursuant to subsection (c), section seven of this article; (3) The coal owner, operator or lessee, in the event the tract of land on which the well proposed to be drilled is located [sic] is known to be underlain by one or more coal seams; (4) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for the placement, construction, enlargement, alteration, repair, removal or abandonment of any impoundment or pit as described in section nine of this article; (5) Any surface owner or water purveyor who is known to the applicant to have a water well, spring or water supply source located within one thousand five hundred feet of the center of the well pad which is used to provide water for consumption by humans or domestic animals; and (6) The operator of any natural gas storage field within which the proposed well work activity is to take place. (c)(1) If more than three tenants in common or other co-owners of interests described in subsection (b) of this section hold interests in the lands, the applicant may serve the documents required upon the person described in the records of the sheriff required to be maintained pursuant to section eight, article one, chapter eleven-a of this code. (2) Notwithstanding any provision of this article to the contrary, notice to a lien holder is not notice to a landowner, unless the lien holder is the landowner. W. Va. Code R. § 35-8-5.7.a requires, in part, that the operator shall also provide the Well Site Safety Plan ("WSSP") to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Application Notice  WSSP Notice  E&S Plan Notice  Well Plat Notice is hereby provided to:

SURFACE OWNER(s)

Name: Melvin and Renee Howdershell  
Address: 306 Stony Run Road  
Moatsville, WV 26405

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

SURFACE OWNER(s) (Road and/or Other Disturbance)

Name: Melvin and Renee Howdershell  
Address: 306 Stony Run Road  
Moatsville, WV 26405

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

SURFACE OWNER(s) (Impoundments or Pits)

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

COAL OWNER OR LESSEE

Name: See Attached  
Address: \_\_\_\_\_

COAL OPERATOR

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)

Name: See Attached  
Address: \_\_\_\_\_

OPERATOR OF ANY NATURAL GAS STORAGE FIELD

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

\*Please attach additional forms if necessary

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**Notice is hereby given:**

Pursuant to West Virginia Code § 22-6A-10(b), notice is hereby given that the undersigned well operator has applied for a permit for well work or for a certificate of approval for the construction of an impoundment or pit.

**This Notice Shall Include:**

Pursuant to W. Va. Code § 22-6A-10(b), this notice shall include: (1) copies of the application; (2) the erosion and sediment control plan required by section seven of this article; and (3) the well plat.

Pursuant to W. Va. Code § 22-6A-10(f), this notice shall include: (1) a statement of the time limits for filing written comments; (2) who may file written comments; (3) the name and address of the secretary for the purpose of filing the comments and obtaining additional information; and (4) a statement that the persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

Pursuant to W. Va. Code R. § 35-8-5.7.a, the operator shall provide the Well Site Safety Plan to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Pursuant to W. Va. Code R. § 35-8-15.2.c, this notice shall: (1) contain a statement of the surface owner's and water purveyor's right to request sampling and analysis; (2) advise the surface owner and water purveyor of the rebuttable presumption for contamination or deprivation of a fresh water source or supply; advise the surface owner and water purveyor that refusal to allow the operator to conduct a pre-drilling water well test constitutes a method to rebut the presumption of liability; (3) advise the surface owner and water purveyor of his or her independent right to sample and analyze any water supply at his or her own expense; advise the surface owner and water purveyor whether or not the operator will utilize an independent laboratory to analyze any sample; and (4) advise the surface owner and or water purveyor that he or she can obtain from the Chief a list of water testing laboratories in the subject area capable of and qualified to test water supplies in accordance with standard acceptable methods.

Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

**Well Location Restrictions**

Pursuant to W. Va. Code § 22-6A-12, Wells may not be drilled within two hundred fifty feet measured horizontally from any existing water well or developed spring used for human or domestic animal consumption. The center of well pads may not be located within six hundred twenty-five feet of an occupied dwelling structure, or a building two thousand five hundred square feet or larger used to house or shelter dairy cattle or poultry husbandry. This limitation is applicable to those wells, developed springs, dwellings or agricultural buildings that existed on the date a notice to the surface owner of planned entry for surveying or staking as provided in section ten of this article or a notice of intent to drill a horizontal well as provided in subsection (b), section sixteen of this article was provided, whichever occurs first, and to any dwelling under construction prior to that date. This limitation may be waived by written consent of the surface owner transmitted to the department and recorded in the real property records maintained by the clerk of the county commission for the county in which such property is located. Furthermore, the well operator may be granted a variance by the secretary from these distance restrictions upon submission of a plan which identifies the sufficient measures, facilities or practices to be employed during well site construction, drilling and operations. The variance, if granted, shall include terms and conditions the department requires to ensure the safety and protection of affected persons and property. The terms and conditions may include insurance, bonding and indemnification, as well as technical requirements. (b) No well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland, or within three hundred feet of a naturally reproducing trout stream. No well pad may be located within one thousand feet of a surface or ground water intake of a public water supply. The distance from the public water supply as identified by the department shall be measured as follows: (1) For a surface water intake on a lake or reservoir, the distance shall be measured from the boundary of the lake or reservoir. (2) For a surface water intake on a flowing stream, the distance shall be measured from a semicircular radius extending upstream of the surface water intake. (3) For a groundwater source, the distance shall be measured from the wellhead or spring. The department may, in its discretion, waive these distance restrictions upon submission of a plan identifying sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. A waiver, if granted, shall impose any permit conditions as the secretary considers necessary. (c) Notwithstanding the foregoing provisions of this section, nothing contained in this section prevents an operator from conducting the activities permitted or authorized by a Clean Water Act Section 404 permit or other approval from the United States Army Corps of Engineers within any waters of the state or within the restricted areas referenced in this section. (d) The well location restrictions set forth in this section shall not apply to any well on a multiple well pad if at least one of the wells was permitted prior to the effective date of this article. (e) The secretary shall, by December 31, 2012, report to the Legislature on the noise, light, dust and volatile organic compounds generated by the drilling of horizontal wells as they relate to the well location restrictions regarding occupied dwelling structures pursuant to this section. Upon a finding, if any, by the secretary that the well location restrictions regarding occupied dwelling structures are inadequate or otherwise require alteration to address the items

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examined in the study required by this subsection, the secretary shall have the authority to propose for promulgation legislative rules establishing guidelines and procedures regarding reasonable levels of noise, light, dust and volatile organic compounds relating to drilling horizontal wells, including reasonable means of mitigating such factors, if necessary.

**Water Well Testing:**

Pursuant to West Virginia Code § 22-6A-10(d), notification shall be made, with respect to surface landowners identified in subsection (b) or water purveyors identified in subdivision (5), subsection (b) of this section, of the opportunity for testing their water well. The operator shall provide an analysis to such surface landowner or water purveyor at their request.

**Water Testing Laboratories:**

Pursuant to West Virginia Code § 22-6A-10(i), persons entitled to notice pursuant to subsection (b) of this section may contact the department to ascertain the names and locations of water testing laboratories in the subject area capable and qualified to test water supplies in accordance with standard accepted methods. In compiling that list of names the department shall consult with the state Bureau for Public Health and local health departments. A surface owner and water purveyor has an independent right to sample and analyze any water supply at his or her own expense. The laboratory utilized by the operator shall be approved by the agency as being certified and capable of performing sample analyses in accordance with this section.

**Rebuttable Presumption for Contamination or Deprivation of a Fresh Water Source or Supply:**

W. Va. Code § 22-6A-18 requires that (b) unless rebutted by one of the defenses established in subsection (c) of this section, in any action for contamination or deprivation of a fresh water source or supply within one thousand five hundred feet of the center of the well pad for horizontal well, there is a rebuttable presumption that the drilling and the oil or gas well or either was the proximate cause of the contamination or deprivation of the fresh water source or supply. (c) In order to rebut the presumption of liability established in subsection (b) of this section, the operator must prove by a preponderance of the evidence one of the following defenses: (1) The pollution existed prior to the drilling or alteration activity as determined by a predrilling or prealteration water well test. (2) The landowner or water purveyor refused to allow the operator access to the property to conduct a predrilling or prealteration water well test. (3) The water supply is not within one thousand five hundred feet of the well. (4) The pollution occurred more than six months after completion of drilling or alteration activities. (5) The pollution occurred as the result of some cause other than the drilling or alteration activity. (d) Any operator electing to preserve its defenses under subdivision (1), subsection (c) of this section shall retain the services of an independent certified laboratory to conduct the predrilling or prealteration water well test. A copy of the results of the test shall be submitted to the department and the surface owner or water purveyor in a manner prescribed by the secretary. (e) Any operator shall replace the water supply of an owner of interest in real property who obtains all or part of that owner's supply of water for domestic, agricultural, industrial or other legitimate use from an underground or surface source with a comparable water supply where the secretary determines that the water supply has been affected by contamination, diminution or interruption proximately caused by the oil or gas operation, unless waived in writing by that owner. (f) The secretary may order the operator conducting the oil or gas operation to: (1) Provide an emergency drinking water supply within twenty-four hours; (2) Provide temporary water supply within seventy-two hours; (3) Within thirty days begin activities to establish a permanent water supply or submit a proposal to the secretary outlining the measures and timetables to be used in establishing a permanent supply. The total time in providing a permanent water supply may not exceed two years. If the operator demonstrates that providing a permanent replacement water supply cannot be completed within two years, the secretary may extend the time frame on case-by-case basis; and (4) Pay all reasonable costs incurred by the real property owner in securing a water supply. (g) A person as described in subsection (b) of this section aggrieved under the provisions of subsections (b), (e) or (f) of this section may seek relief in court... (i) Notwithstanding the denial of the operator of responsibility for the damage to the real property owner's water supply or the status of any appeal on determination of liability for the damage to the real property owner's water supply, the operator may not discontinue providing the required water service until authorized to do so by the secretary or a court of competent jurisdiction.

**Written Comment:**

Pursuant to West Virginia Code § 22-6A-11(a), all persons described in subsection (b), section ten of this article may file written comments with the secretary as to the location or construction of the applicant's proposed well work within thirty days after the application is filed with the secretary. All persons described in West Virginia Code § 22-6A-10(b) may file written comments as to the location or construction of the applicant's proposed well work to the Secretary at:

Chief, Office of Oil and Gas  
Department of Environmental Protection  
601 57<sup>th</sup> St. SE  
Charleston, WV 25304  
(304) 926-0450

Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water. **NOTE: YOU ARE NOT REQUIRED TO FILE ANY COMMENT.**

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**Time Limits and Methods for Filing Comments.**

The law requires these materials to be served on or before the date the operator files its Application. You have **THIRTY (30) DAYS** after the filing date to file your comments. Comments must be filed in person or received in the mail by the Chief's office by the time stated above. You may call the Chief's office to be sure of the date. Check with your postmaster to ensure adequate delivery time or to arrange special expedited handling. If you have been contacted by the well operator and you have signed a "voluntary statement of no objection" to the planned work described in these materials, then the permit may be issued at any time.

Pursuant to West Virginia Code § 22-6A-11(c)(2), Any objections of the affected coal operators and coal seam owners and lessees shall be addressed through the processes and procedures that exist under sections fifteen, seventeen and forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article. The written comments filed by the parties entitled to notice under subdivisions (1), (2), (4), (5) and (6), subsection (b), section ten of this article shall be considered by the secretary in the permit issuance process, but the parties are not entitled to participate in the processes and proceedings that exist under sections fifteen, seventeen or forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article.

**Comment Requirements**

Your comments must be in writing and include your name, address and telephone number, the well operator's name and well number and the approximate location of the proposed well site including district and county from the application. You may add other documents, such as sketches, maps or photographs to support your comments.

Disclaimer: All comments received will be placed on our web site <http://www.dep.wv.gov/oil-and-gas/Horizontal-Permits/Pages/default.aspx> and the applicant will automatically be forwarded an email notice that such comments have been submitted. The applicant will be expected to provide a response to comments submitted by any surface owner, water purveyor or natural gas storage operator noticed within the application.

**Permit Denial or Condition**

The Chief has the power to deny or condition a well work permit. Pursuant to West Virginia Code § 22-6A-8(d), the permit may not be issued or be conditioned, including conditions with respect to the location of the well and access roads prior to issuance if the director determines that:

- (1) The proposed well work will constitute a hazard to the safety of persons;
- (2) The plan for soil erosion and sediment control is not adequate or effective;
- (3) Damage would occur to publicly owned lands or resources; or
- (4) The proposed well work fails to protect fresh water sources or supplies.

A permit may also be denied under West Virginia Code § 22-6A-7(k), the secretary shall deny the issuance of a permit if the secretary determines that the applicant has committed a substantial violation of a previously issued permit for a horizontal well, including the applicable erosion and sediment control plan associated with the previously issued permit, or a substantial violation of one or more of the rules promulgated under this article, and in each instance has failed to abate or seek review of the violation within the time prescribed by the secretary pursuant to the provisions of subdivisions (1) and (2), subsection (a), section five of this article and the rules promulgated hereunder, which time may not be unreasonable.

Pursuant to West Virginia Code § 22-6A-10(g), any person entitled to submit written comments to the secretary pursuant to subsection (a), section eleven of this article, shall also be entitled to receive from the secretary a copy of the permit as issued or a copy of the order modifying or denying the permit if the person requests receipt of them as a part of the written comments submitted concerning the permit application. Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

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WW-6A  
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API NO. 47- \_\_\_\_\_  
OPERATOR WELL NO. Howdershell BCH 205  
Well Pad Name: Howdershell BCH

**Notice is hereby given by:**

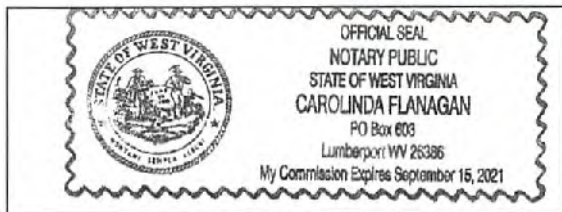
Well Operator: Arsenal Resources  
Telephone: 724-940-1218  
Email: kdavis@arsenalresources.com



Address: 6031 Wallace Road Extension, Suite 300  
Wexford, PA 15090  
Facsimile: 304-848-9134

**Oil and Gas Privacy Notice:**

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at [deprivacyofficer@wv.gov](mailto:deprivacyofficer@wv.gov).



Subscribed and sworn before me this 15<sup>th</sup> day of December 2017

Carolinda Flanagan Notary Public

My Commission Expires 9/15/2021

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## Howdershelt BCH

### Drill Site (Surface)

Melvin & Renee Howdershelt /  
306 Stony Run Road  
Moatsville, WV 26405

### Road (Surface)

Melvin & Renee Howdershelt /  
306 Stony Run Road  
Moatsville, WV 26405

### Drill Site – Coal

Melvin & Renee Howdershelt /  
306 Stony Run Road  
Moatsville, WV 26405

Blackhawk Land and Resources, LLC /  
3328 Summit Square Place, Suite 180  
Lexington, KY 40509

### Drill Site – Oil & Gas

Melvin & Renee Howdershelt /  
306 Stony Run Road  
Moatsville, WV 26405

### Water Purveyors

Melvin & Renee Howdershelt /  
306 Stony Run Road  
Moatsville, WV 26405

Bradley & Desiree Howdershelt  
2527 Mountaineer Road  
Moatsville, WV 26405

Eric V. Howdershelt  
c/o Adam & Jessica McLean  
2469 Mountaineer Road  
Moatsville, WV 26405

Glenn J. Moore et ux  
2781 Mountaineer Road  
Moatsville, WV 26405

Ira G. & Carol Hovatter  
1838 Kasson Road  
Moatsville, WV 26405

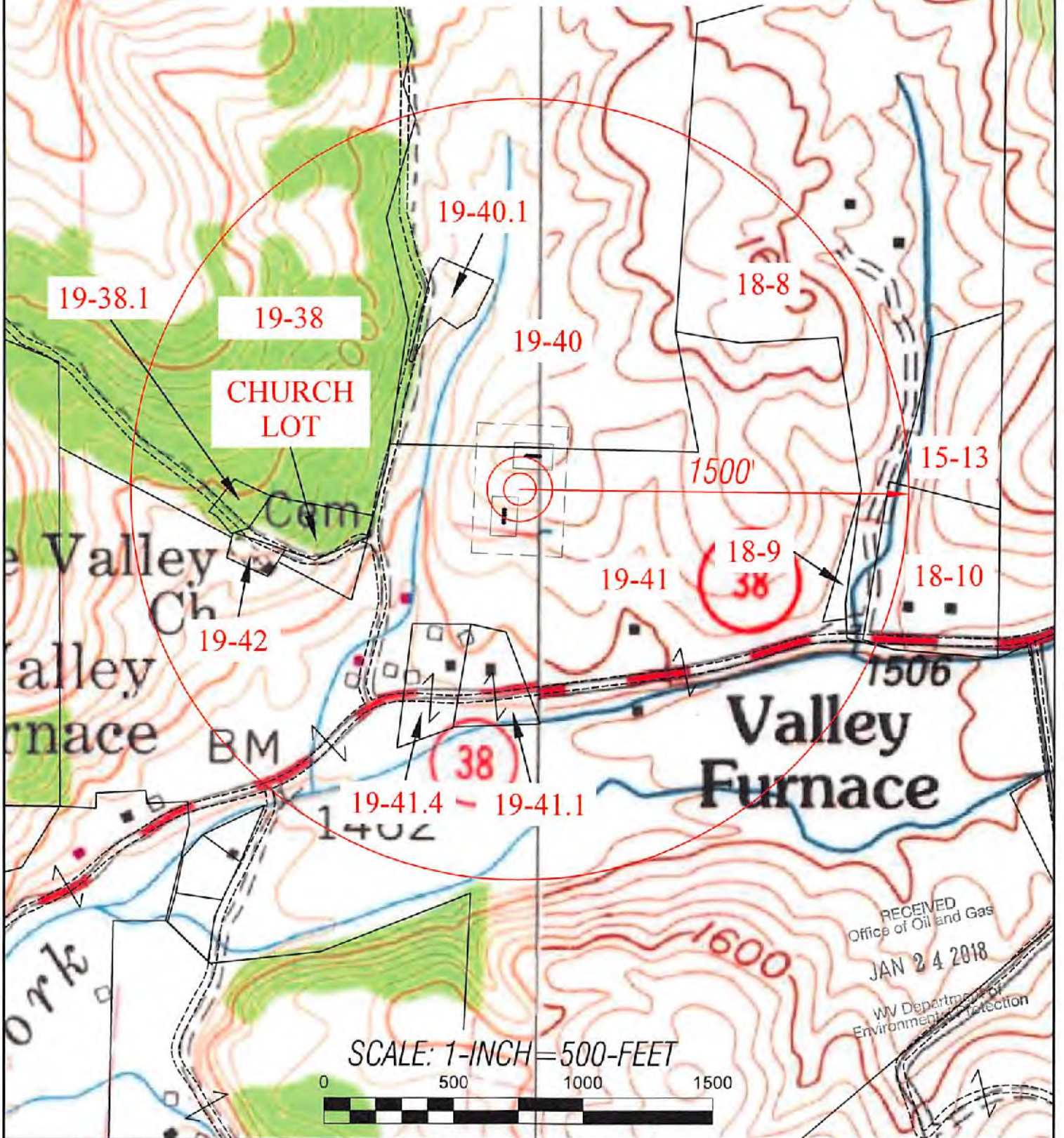
New Hope Valley Church  
RR 2 Box 87C  
Philippi, WV 26416

William Thomas Owens  
2851 Mountaineer Road  
Moatsville, WV 26405

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# HOWDERSHELT PAD POSSIBLE WATER PURVEYORS



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SCALE: 1-INCH = 500-FEET



**SLS**  
Land & Energy Development  
Sustains From the ground up

DRAWN BY K.G.M.	FILE NO. 8606	DATE 12-11-17	CADD FILE: 7042WATERPURVEYOR.DWG
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TOPO SECTIONS OF: COLEBANK & NESTORVILLE WV 7.5' QUADRANGLE	
COUNTY	DISTRICT
BARBOUR	COVE

OPERATOR:  
**ARSENAL RESOURCES**  
65 Professional Place, Suite 200  
Bridgeport, WV 26330  
**05/25/2018**



## Possible Water Purveyors within 1,500 feet of Howdershelt Pad

MAP	PARCEL	OWNER	IN CARE OF	ADDRESS
15	13	MOORE J GLENN ET UX		2781 MOUNTAINEER RD , MOATSVILLE , WV 26405
18	8	MOORE J GLENN		2781 MOUNTAINEER RD , MOATSVILLE , WV 26405
18	9	OWENS THOMAS WILLIAM		2851 MOUNTAINEER RD , MOATSVILLE , WV 26405
18	10	OWENS THOMAS WILLIAM		2851 MOUNTAINEER RD , MOATSVILLE , WV 26405
19	38	HOVATTER IRA G & CAROL HWS (TOD)		1838 KASSON RD , MOATSVILLE , WV 26405
19	38.1	NEW HOPE VALLEY UM CHURCH		, XX , XX
19	40	HOWDERSHOLT LIVING TRUST MELVIN & GRACE HOWDERSHOLT	TRUSTEES	306 STONY RN , MOATSVILLE , WV 26405
19	40.1	HOWDERSHOLT LIVING TRUST MELVIN & RENEE HOWDERSHOLT	TRUSTEES	306 STONY RN , MOATSVILLE , WV 26405
19	41	HOWDERSHOLT LIVING TRUST MELVIN & RENEE HOWDERSHOLT	TRUSTEES	306 STONY RN , MOATSVILLE , WV 26405
19	41.1	HOWDERSHOLT BRADLEY & DESIREE WS		2527 MOUNTAINEER RD , MOATSVILLE , WV 26405
19	41.4	HOWDERSHOLT V ERIC	C/O ADAM & JESSICA MCLEAN WS	2469 MOUNTAINEER RD , MOATSVILLE , WV 26405
19	42	NEW HOPE VALLEY CHURCH		RR , PHILIPPI , WV 26416

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WW-6A3  
(1/12)

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
NOTICE OF ENTRY FOR PLAT SURVEY

Notice Time Requirement: Notice shall be provided at least SEVEN (7) days but no more than FORTY-FIVE (45) days prior to entry

Date of Notice: 6-8-17 Date of Planned Entry: 6-15-17

Delivery method pursuant to West Virginia Code § 22-6A-10a

- PERSONAL SERVICE
- REGISTERED MAIL
- METHOD OF DELIVERY THAT REQUIRES A RECEIPT OR SIGNATURE CONFIRMATION

Pursuant to West Virginia Code § 22-6A-10(a), Prior to filing a permit application, the operator shall provide notice of planned entry on to the surface tract to conduct any plat surveys required pursuant to this article. Such notice shall be provided at least seven days but no more than forty-five days prior to such entry to: (1) The surface owner of such tract; (2) to any owner or lessee of coal seams beneath such tract that has filed a declaration pursuant to section thirty-six, article six, chapter twenty-two of this code; and (3) any owner of minerals underlying such tract in the county tax records. The notice shall include a statement that copies of the state Erosion and Sediment Control Manual and the statutes and rules related to oil and gas exploration and production may be obtained from the Secretary, which statement shall include contact information, including the address for a web page on the Secretary's web site, to enable the surface owner to obtain copies from the secretary.

Notice is hereby provided to:

SURFACE OWNER(s)

Name: Melvin and Renee Howdershell

Address: 306 Stony Run Road  
Moatsville, WV 26405

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Name: \_\_\_\_\_

Address: \_\_\_\_\_

COAL OWNER OR LESSEE

Name: See Attached

Address: \_\_\_\_\_

MINERAL OWNER(s)

Name: Melvin and Renee Howdershell

Address: 306 Stony Run Road  
Moatsville, WV 26405

\*please attach additional forms if necessary

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-10(a), notice is hereby given that the undersigned well operator is planning entry to conduct a plat survey on the tract of land as follows:

State: <u>West Virginia</u>	Approx. Latitude & Longitude: <u>39.197459, -79.764113</u>
County: <u>Barbour</u>	Public Road Access: <u>CR 38</u>
District: <u>Cove</u>	Watershed: <u>Brushy Fork</u>
Quadrangle: <u>Nastorville</u>	Generally used farm name: <u>Howdershell</u>

Copies of the state Erosion and Sediment Control Manual and the statutes and rules related to oil and gas exploration and production may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450). Copies of such documents or additional information related to horizontal drilling may be obtained from the Secretary by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

Notice is hereby given by:

Well Operator: Arsenal Resources

Telephone: 724-940-1218

Email: kdavis@arsenalresources.com

Address: 6031 Wallace Road Extension, Suite 300  
Wexford, PA 15090

Facsimile: 304-848-9134

RECEIVED  
Office of Oil and Gas

JAN 24 2018

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at [depprivacyofficer@wv.gov](mailto:depprivacyofficer@wv.gov).

05/25/2018

4700103359

**Howdershelt BCH**  
**Attachment for Notice of Entry for Plat Survey**

**Drill Site – Coal**

Melvin & Renee Howdershelt ✓  
306 Stony Run Road  
Moatsville, WV 26405

Blackhawk Land and Resources, LLC ✓  
3328 Summit Square Place, Suite 180  
Lexington, KY 40509

RECEIVED  
Office of Oil and Gas

JAN 24 2018

WV Department of  
Environmental Protection

05/25/2018

WW-6A5  
(1/12)

**STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
NOTICE OF PLANNED OPERATION**

**Notice Time Requirement:** notice shall be provided no later than the filing date of permit application.

**Date of Notice:** 12-15-17      **Date Permit Application Filed:** 1-23-18

**Delivery method pursuant to West Virginia Code § 22-6A-16(c)**

- CERTIFIED MAIL                                       HAND  
RETURN RECEIPT REQUESTED                                      DELIVERY

Pursuant to W. Va. Code § 22-6A-16(c), no later than the date for filing the permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner whose land will be used for the drilling of a horizontal well notice of the planned operation. The notice required by this subsection shall include: (1) A copy of this code section; (2) The information required to be provided by subsection (b), section ten of this article to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. (d) The notices required by this section shall be given to the surface owner at the address listed in the records of the sheriff at the time of notice.

**Notice is hereby provided to the SURFACE OWNER(s)**  
(at the address listed in the records of the sheriff at the time of notice):

<b>Name:</b> <u>Melvin and Renee Howdershell</u>	<b>Name:</b> _____
<b>Address:</b> <u>306 Stony Run Road</u> <u>Moatsville, WV 26405</u>	<b>Address:</b> _____

**Notice is hereby given:**

Pursuant to West Virginia Code § 22-6A-16(c), notice is hereby given that the undersigned well operator has developed a planned operation on the surface owner's land for the purpose of drilling a horizontal well on the tract of land as follows:

<b>State:</b> <u>West Virginia</u>	<b>UTM NAD 83</b>	<b>Easting:</b> <u>597124.0</u>
<b>County:</b> <u>Barbour</u>		<b>Northing:</b> <u>4339234.5</u>
<b>District:</b> <u>Cove</u>	<b>Public Road Access:</b>	<u>CR 38</u>
<b>Quadrangle:</b> <u>Nestorville</u>	<b>Generally used farm name:</b>	<u>Howdershell</u>
<b>Watershed:</b> <u>Brushy Fork</u>		

**This Notice Shall Include:**

Pursuant to West Virginia Code § 22-6A-16(c), this notice shall include: (1) A copy of this code section; (2) The information required to be provided by W. Va. Code § 22-6A-10(b) to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

<b>Well Operator:</b> <u>Arsenal Resources</u>	<b>Address:</b> <u>6031 Wallace Road Extension, Suite 300</u>
<b>Telephone:</b> <u>724-940-1218</u>	<u>Wexford, PA 15090</u>
<b>Email:</b> <u>kdavis@arsenalresources.com</u>	<b>Facsimile:</b> <u>304-848-9134</u>

**Oil and Gas Privacy Notice:**

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at [depprivacyofficer@wv.gov](mailto:depprivacyofficer@wv.gov).

RECEIVED  
Office of Oil and Gas  
JAN 24 2018  
WV Department of  
Environmental Protection

05/25/2018



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
**Division of Highways**

1900 Kanawha Boulevard East • Building Five • Room 110  
 Charleston, West Virginia 25305-0430 • (304) 558-3505

Thomas J. Smith, P. E.  
 Secretary of Transportation/  
 Commissioner of Highways

May 23, 2018

Jill M. Newman  
 Deputy Commissioner

James A. Martin, Chief  
 Office of Oil and Gas  
 Department of Environmental Protection  
 601 57<sup>th</sup> Street, SE  
 Charleston, WV 25304

Subject: DOH Permit for the Howdershelt Pad and Tank Site, Barbour County

Howdershelt BCH 205 Well Site

Dear Mr. Martin,

The West Virginia Division of Highways has issued Permits #07-2018-0253 & 07-2018-0252 for the subject site to ARSENAL Resources for access to the State Road for the well site located off of WV Route 38 in Barbour County.

The operator has signed a DISTRICT WIDE OIL AND GAS ROAD MAINTENANCE BONDING AGREEMENT for DOH District 7 and provided the required Bond. This operator is currently in compliance with the DOH OIL AND GAS POLICY dated January 3, 2012.

Very Truly Yours,

Gary K. Clayton  
 Regional Maintenance Engineer  
 Central Office Oil & Gas Coordinator

Cc: Kelly Davis  
 ARSENAL Resources  
 CH, OM, D-7  
 File

Howdershelt 205			
FRACTURING ADDITIVES			
	PURPOSE	TRADE NAME	CAS #
Additive #1:	Friction Reducer	WFRA-405	Proprietary
Additive #2:	Scale Inhibitor	SI-1000	7440-21-3
Additive #3:	Biocide	BIOCLEAR 2000	25314-61-8
Additive #4:	Gelling Agent	LGC-15	9000-30-0
Additive #5:	Corrosion Inhibitor	AI-300	111-76-2
Additive #6:	Gel Breaker	AP-One	7727-54-0
Additive #7:	Acid	HCl - 7.5%	7647-01-0

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Office of Oil and Gas  
JAN 24 2018  
WV Department of  
Environmental Protection  
05/25/2018

**PROJECT INFORMATION**

PROJECT NAME: HOWERSHILT WELLS 201, 202, & 211-216  
 TAX PARCEL:  
 COVE DISTRICT  
 MAP 10 PARCELS 42 & 43

**SURFACE OWNERS:**

WELAND & RENEE HOWERSHILT  
 COVE DISTRICT  
 BARBOUR COUNTY, WV  
 TOTAL PROPERTY AREA: PARCEL 42 71.96 ACRES  
 PARCEL 43 150.64 ACRES  
 DISTURBANCE AREA: 16.8 ACRES

OG AND GAO REALTY OWNER  
 KELLY W & RENEE HOWERSHILT  
 COVE DISTRICT  
 BARBOUR COUNTY, WV  
 TOTAL PROPERTY AREA: PARCEL 42 71.96 ACRES  
 PARCEL 43 150.64 ACRES  
 DISTURBANCE AREA: 16.8 ACRES



**SITE LOCATION**  
 THE HOWERSHILT WELLS 201-206 & 211-216 ARE LOCATED ON THE NORTH SIDE OF WV ROUTE 33 APPROXIMATELY 1,500 FEET WEST OF WV ROUTE 33 AND CO. ROUTE 3 INTERSECTION.

**PROPERTY DISTURBANCE COMPUTATIONS**

THE MAP IS PARCEL 41 - 14.4 ACRES  
 PARCEL 42 - 14.4 ACRES  
 TOTAL SITE DISTURBANCE - 108.8 ACRES

**LOCATION COORDINATES**

**PAD SITE ENTRANCE**  
 EASTING: 761,500.00; LONGITUDE: -794,750.00 (EAD 80)

**CENTER OF WELL PAD**  
 EASTING: 761,500.00; LONGITUDE: -794,750.00 (EAD 80)

**CENTER OF ART PAD**  
 EASTING: 761,500.00; LONGITUDE: -794,750.00 (EAD 80)

**ART PAD ENTRANCE**  
 EASTING: 761,500.00; LONGITUDE: -794,750.00 (EAD 80)

**SITE DISTURBANCE COMPUTATIONS**

WELL PAD AREA - 0.8 ACRES  
 ART PAD AREA - 0.8 ACRES  
 STOCKPILE AREA - 1.2 ACRES

**TOTAL SITE DISTURBANCE** - 108.8 ACRES  
**TOBE CLEARING AREA** - 0.8 ACRES

**ENTRANCE PERMIT**  
 ARSENAL RESOURCES WILL OBTAIN AN ENCROACHMENT PERMIT FROM THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.

**MISS UTILITY STATEMENT**  
 MISS UTILITY OF WEST VIRGINIA HAS REVIEWED THIS PROJECT FOR THE LOCATION OF UTILITIES PRIOR TO THIS PROJECT DESIGN. FIELD SURVEY OF ANY UTILITIES NOT SHOWN WILL BE CONDUCTED PRIOR TO START OF THE PROJECT.

**FLOODPLAIN NOTE**  
 THE PROPOSED LIMITS OF DISTURBANCE FOR THIS PROJECT ARE LOCATED IN FEMA FLOOD ZONE X WITH THE FLOOD INSURANCE RATE MAP (FIRM) NUMBER 58040C0040C AND HYDROLOGIC DATES MAY 22, 2011.

**GEOTECHNICAL NOTE**  
 A SUBSURFACE INVESTIGATION HAS NOT BEEN PERFORMED AS OF 10-11-2017. THE ENGINEER AND SURVEYOR ARE NOT RESPONSIBLE FOR UNDERGROUND SUBSURFACE IRREGULARITIES CAUSING ADDITIONAL WORK OR ADJUSTMENT. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING EXISTING UTILITIES SHOWN ON THIS PLAN AS A RESULT OF ANY OTHER GEOTECHNICAL COMPLICATIONS ENCOUNTERED DURING CONSTRUCTION.

**ENVIRONMENTAL NOTE**  
 A WELAND/STREAM DELINEATION WAS PERFORMED ON 02-08-2018 BY FORREYCOON, LLC AND ON 07-22-2017 BY SLD TO REVIEW THE SITE FOR WELAND AND WELAND THAT ARE MOST LIKELY WITHIN THE REGULATORY JURISDICTION OF THE U.S. ARMY CORPS OF ENGINEERS (USACE) AND/OR THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (WVDEP). THE DELINEATION DATA REPORT WAS PREPARED BY FORREYCOON, LLC AND THE ONLY REPORT WAS PREPARED BY SLD AND SUMMARIZED THE RESULTS OF THE FIELD DELINEATION. THE REPORT DOES NOT, IN ANY WAY, REPRESENT A PROFESSIONAL DETERMINATION OF THE EXACTED LIMITS OF WELAND AND WELAND. THESE LIMITS MAY BE ADJUSTED BY THE USACE OR THE WVDEP. IT IS STRONGLY RECOMMENDED THAT THE WELAND/STREAM DELINEATION BE CONSIDERED IN AN EFFORT TO OBTAIN PROPER CONFORMANCE OF THE DELINEATION DETERMINED BY THIS REPORT PRIOR TO EXHIBITING CONSTRUCTION ON THE PROPERTY DESCRIBED HEREIN. THE DEVELOPER SHALL OBTAIN THE APPROPRIATE PERMITS FROM THE FEDERAL ARMY CORPS OF ENGINEERS AND/OR THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION PRIOR TO ANY PROPOSED IMPACTS TO WELAND OF THE U.S. INCLUDING WELAND FISH AND STREAM CROSSINGS.

**GENERAL DESCRIPTION**  
 THE HOWERSHILT PAD AND ART PAD ARE BEING CONSTRUCTED TO AID IN THE DEVELOPMENT OF INDIVIDUAL MANAGED UNDER GAO WELLS.

**RESTRICTION NOTES:**

1. THERE ARE NO WELAND WITHIN 100' OF THE WELL PAD LOT.
2. THERE ARE NO PERMANENT STREAMS, BARRIERS, PONDS, OR RESERVOIRS WITHIN 100 FEET OF THE WELL PAD LOT.
3. THERE ARE NO NATURALLY FORMING, TIGHTLY SLOTTED WITHIN 100 FEET OF THE WELL PAD AND LOT.
4. THERE ARE NO GROUNDWATER DRAINAGE OR PUBLIC WATER SUPPLY FACILITIES WITHIN 100 FEET OF THE WELL PAD AND LOT.
5. THERE ARE NO AERIAL OR EXISTING WATER PIPES OR CULVERTS WITHIN 100 FEET OF THE WELL PAD AND LOT.
6. THERE ARE NO DISPERSED WELAND WITHIN 100 FEET OF THE CENTER OF THE WELL PAD.
7. THERE ARE NO GEOLOGICAL IRREGULARITIES WITHIN 100 FEET OF THE CENTER OF THE WELL PAD.

# HOWERSHILT FINAL SITE PLAN

## ARSENAL RESOURCES

### PROPOSED WELL #'S BCH 201, 202, 203, 204, 205, 206, 211, 212, 213, 214, 215, & 216

SITUATE ON THE WATERS OF TRIBUTARIES OF BRUSHY FORK IN COVE DISTRICT, BARBOUR COUNTY, WEST VIRGINIA.



**LIST OF DRAWINGS**

- 1 - COVER SHEET
- 2 - NOTES
- 3 - OVERALL SHEET INDEX & VOLUMES
- 4 - WELL PAD & ACCESS ROAD & STOCKPILE
- 5 - ACCESS ROAD & ART PAD & STOCKPILE
- 6 - WELL PAD & STOCKPILE PROFILES
- 7 - ART PAD & STOCKPILE PROFILE
- 8 - ROAD PROFILES
- 9 - CROSS SECTIONS
- 10 - RECLAMATION PLAN
- 11 - CONSTRUCTION DETAILS
- 12 - CONSTRUCTION DETAILS
- 13 - CONSTRUCTION DETAILS
- 14 - CONSTRUCTION DETAILS

EXISTING		PROPOSED	
UNDER CONTOUR	--- (Blue)	UNDER CONTOUR	--- (Red)
INTERMEDIATE CONTOUR	--- (Green)	INTERMEDIATE CONTOUR	--- (Red)
RECLAMATION 2' CONTOUR	--- (Blue)	RECLAMATION 1' CONTOUR	--- (Red)
ROAD EDGE OF GRAVEL/DIRT	--- (Blue)	ROAD EDGE OF GRAVEL/DIRT	--- (Red)
ROAD EDGE OF PAVEMENT	--- (Blue)	ROAD EDGE OF PAVEMENT	--- (Red)
ROAD CENTERLINE	--- (Blue)	ROAD CENTERLINE	--- (Red)
DETERLINE	--- (Blue)	DETERLINE	--- (Red)
WELL PAD	--- (Blue)	WELL PAD	--- (Red)
WELL HEAD	--- (Blue)	WELL HEAD	--- (Red)
4" PVC DRAIN PIPE	--- (Blue)	4" PVC DRAIN PIPE	--- (Red)
CONCRETE	--- (Blue)	CONCRETE	--- (Red)
OVERHEAD UTILITY	--- (Blue)	OVERHEAD UTILITY	--- (Red)
PORTAL POLE	--- (Blue)	PORTAL POLE	--- (Red)
GUY WIRE	--- (Blue)	GUY WIRE	--- (Red)
TELEPHONE LINE	--- (Blue)	TELEPHONE LINE	--- (Red)
WATERLINE	--- (Blue)	WATERLINE	--- (Red)
CANAL	--- (Blue)	CANAL	--- (Red)
CANAL B/W	--- (Blue)	CANAL B/W	--- (Red)
WATERING	--- (Blue)	WATERING	--- (Red)
WATER WELL	--- (Blue)	WATER WELL	--- (Red)
WATERING	--- (Blue)	WATERING	--- (Red)
TRAILING	--- (Blue)	TRAILING	--- (Red)
REFERENCE TREE	--- (Blue)	REFERENCE TREE	--- (Red)
DISPERSED STREAM	--- (Blue)	DISPERSED STREAM	--- (Red)
DISPERSED WETLAND	--- (Blue)	DISPERSED WETLAND	--- (Red)
BUILDING	--- (Blue)	BUILDING	--- (Red)
BRIDGE	--- (Blue)	BRIDGE	--- (Red)
100' WETLAND/STREAM BUFFER	--- (Blue)	100' WETLAND/STREAM BUFFER	--- (Red)
TOE KEY DRAIN	--- (Blue)	TOE KEY DRAIN	--- (Red)
SECTION LINE	--- (Blue)	SECTION LINE	--- (Red)
WATCHDOG	--- (Blue)	WATCHDOG	--- (Red)
2-SECTION GRID INDEX	--- (Blue)	2-SECTION GRID INDEX	--- (Red)
2-SECTION GRID INTERMEDIATE	--- (Blue)	2-SECTION GRID INTERMEDIATE	--- (Red)
2-SECTION PROPOSED GRADE	--- (Blue)	2-SECTION PROPOSED GRADE	--- (Red)
2-SECTION EXISTING GRADE	--- (Blue)	2-SECTION EXISTING GRADE	--- (Red)
2-SECTION WATER SURFACE	--- (Blue)	2-SECTION WATER SURFACE	--- (Red)
SPOT ELEVATION	--- (Blue)	SPOT ELEVATION	--- (Red)
SUBGRADE ELEVATION	--- (Blue)	SUBGRADE ELEVATION	--- (Red)
SUBGRADE SURFACE	--- (Blue)	SUBGRADE SURFACE	--- (Red)
FINISH GRADE ELEVATION	--- (Blue)	FINISH GRADE ELEVATION	--- (Red)
FINISH GRADE SLOPE	--- (Blue)	FINISH GRADE SLOPE	--- (Red)

MISS Utility of West Virginia  
 1-800-245-4848  
 West Virginia State Law  
 (Section XIV; Chapter 24-C)  
 Requires that you call two business days before you dig in the state of West Virginia.  
 IT'S THE LAW!!



THIS DOCUMENT WAS PREPARED BY SLS LAND & ENERGY DEVELOPMENT FOR ARSENAL RESOURCES

COVER SHEET  
**HOWERSHILT FINAL SITE PLAN**  
 COVE DISTRICT  
 BARBOUR COUNTY, WV

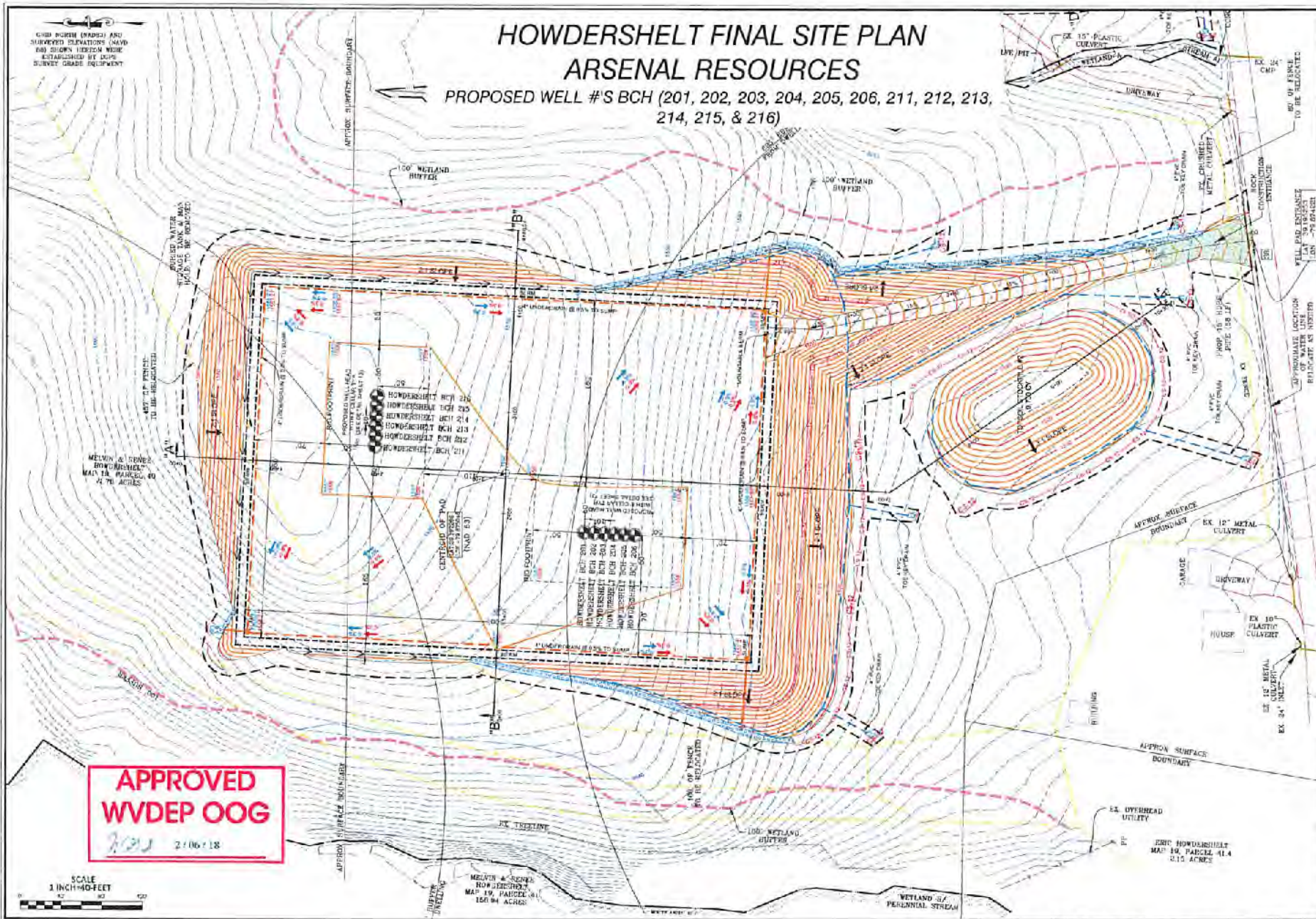
DATE: 10-11-2017  
 SCALE: 1" = 2000'  
 DESIGNED BY: K.L.W.  
 FILE NO.: 7962  
 SHEET 1 OF 14  
 REV: 02-02-2018

4700103359

GRID BORN (MAPPED) AND SURVEY OPERATIONS (AND 60) SHOWN HEREON WERE ESTABLISHED BY DEPT. SURVEY ORANGE EQUIPMENT

# HOWERSHOLT FINAL SITE PLAN ARSENAL RESOURCES

PROPOSED WELL #S BCH (201, 202, 203, 204, 205, 206, 211, 212, 213, 214, 215, & 216)



**APPROVED WVDEP OOG**  
2/16/18

SCALE  
1 INCH=40 FEET



THIS DOCUMENT WAS PREPARED BY SLS LAND & ENERGY DEVELOPMENT FOR ARSENAL RESOURCES

WELL PAD, ACCESS & STOCKPILE  
**HOWERSHOLT  
FINAL SITE PLAN**  
COVE DISTRICT  
BARBOUR COUNTY, WV

DATE 10-11-2017  
SCALE 1" = 40'  
DESIGNED BY K.L.H.  
FILE NO. 2062  
SHEET 4 OF 14  
REV. 02-02-2018

4700103359

PROJECT INFORMATION

PROJECT NAME: HOWDERSHELT WELLS 01-004 & 01-024, IN 01-01-018  
TAX PARCELS: COVE DISTRICT  
MAP 25 PARCELS 40 & 41

ROWSPACE OWNERS

MELVIN & BESSIE HOWDERSHELT  
COVE DISTRICT  
BARBOUR COUNTY, WV  
TOTAL PROPERTY AREA PARCELS 40 & 41: 84.8 ACRES  
INTERESTED AREA: 10.8 ACRES

WELL LOCATION

THE HOWDERSHELT WELLS 01-004 & 01-024 ARE LOCATED ON THE NORTH SIDE OF WY ROUTE 58 APPROXIMATELY 1,000 FEET WEST OF WY ROUTE 58 AND CO. SOUTH INTERSECTION.

PROPERTY DISTURBANCE COMPUTATIONS

TOTAL WELLS DISTURBANCE: 1.0 ACRES  
TOTAL WELLS DISTURBANCE: 1.0 ACRES

LOCATION COORDINATES

FOR THE DISTRICT: BARBOUR COUNTY, WEST VIRGINIA  
CENTER OF WELL PAD: NAD 83 UTM ZONE 18Q UTM EASTING: 793440.000  
NAD 83 UTM ZONE 18Q UTM NORTING: 4711400.000

SITE DISTURBANCE COMPUTATIONS

WELL PAD AREA: 1.0 ACRES  
TOTAL WELLS DISTURBANCE: 1.0 ACRES  
TOTAL WELLS DISTURBANCE: 1.0 ACRES

ENTRANCE PERMIT

ALL WELLS SHALL BE OPENED IN ACCORDANCE WITH THE REGULATIONS OF THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS, PERMITS BY CONSTRUCTION OF CONSTRUCTION ACTIVITIES.

MISS UTILITY STATEMENT

ALL UTILITIES OF THIS DISTRICT ARE SHOWN ON THE COUNTY OF BARBOUR, WEST VIRGINIA, PLANS, MAPS, AND RECORDS. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO ANY CONSTRUCTION.

FLOODPLAIN NOTE

THE FLOODPLAIN MAP OF BARBOUR COUNTY FOR THE DISTRICT IS LOCATED IN THE PLANS, MAPS, AND RECORDS. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO ANY CONSTRUCTION.

GEOTECHNICAL NOTE

A GEOTECHNICAL INVESTIGATION WAS PERFORMED ON 10-17-2017 BY FERRIS, LLC. THE INVESTIGATION REVEALED THAT THE SOILS ARE CONSISTENTLY CLAYEY SANDS AND SILTS. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO ANY CONSTRUCTION.

ENVIRONMENTAL NOTE

A WETLAND/STREAM DELINEATION WAS PERFORMED ON 10-17-2017 BY FERRIS, LLC. THE DELINEATION REVEALED THAT THERE ARE NO WETLANDS OR STREAMS WITHIN THE PROJECT AREA. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO ANY CONSTRUCTION.

GENERAL DESCRIPTION

THE HOWDERSHELT WELLS AND WELLS PAD ARE BEING CONSTRUCTED IN ACCORDANCE WITH THE REGULATIONS OF THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS, PERMITS BY CONSTRUCTION OF CONSTRUCTION ACTIVITIES.

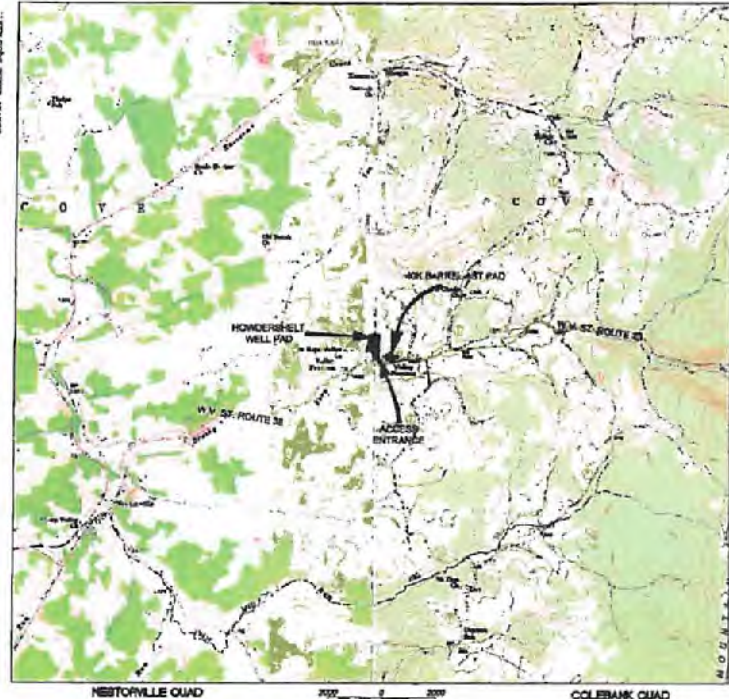
RESTRICTION NOTES

- 1. THERE ARE NO UTILITIES KNOWN TO BE WITHIN THE WELLS PAD AREA.
- 2. THERE ARE NO WETLANDS, STREAMS, LAKES, POND, OR SHORELAND WITHIN THE WELLS PAD AREA.
- 3. THERE ARE NO ARCHITECTURAL, HISTORICAL, OR CULTURAL RESOURCES WITHIN THE WELLS PAD AREA.
- 4. THERE ARE NO ADJACENT PROPERTY OWNERS WITHIN THE WELLS PAD AREA.
- 5. THERE ARE NO RECEIVING WETLANDS WITHIN THE WELLS PAD AREA.
- 6. THERE ARE NO ARCHITECTURAL, HISTORICAL, OR CULTURAL RESOURCES WITHIN THE WELLS PAD AREA.

# HOWDERSHELT FINAL SITE PLAN ARSENAL RESOURCES

PROPOSED WELL #S BCH 201, 202, 203, 204, 205, 206, 211, 212, 213, 214, 215, & 216

SITUATE ON THE WATERS OF TRIBUTARIES OF BRUSHY FORK IN COVE DISTRICT, BARBOUR COUNTY, WEST VIRGINIA.



LIST OF DRAWINGS

- 1 - COVER SHEET
- 2 - NOTES
- 3 - OVERALL SHEET INDEX & VOLUMES
- 4 - WELL PAD & ACCESS ROAD & STOCKPILE
- 5 - ACCESS ROAD & WELLS PAD & STOCKPILE
- 6 - WELL PAD & STOCKPILE PROFILES
- 7 - WELLS PAD & STOCKPILE PROFILES
- 8 - ROAD PROFILES
- 9 - ROAD PROFILES
- 10 - RECLAMATION PLAN
- 11 - CONSTRUCTION DETAILS
- 12 - CONSTRUCTION DETAILS
- 13 - CONSTRUCTION DETAILS
- 14 - CONSTRUCTION DETAILS

EXISTING		PROPOSED	
WELL PAD	[Symbol]	WELL PAD	[Symbol]
ACCESS ROAD	[Symbol]	ACCESS ROAD	[Symbol]
STOCKPILE	[Symbol]	STOCKPILE	[Symbol]
ROAD PROFILE	[Symbol]	ROAD PROFILE	[Symbol]
WELL PAD PROFILE	[Symbol]	WELL PAD PROFILE	[Symbol]
STOCKPILE PROFILE	[Symbol]	STOCKPILE PROFILE	[Symbol]
RECLAMATION PLAN	[Symbol]	RECLAMATION PLAN	[Symbol]
CONSTRUCTION DETAILS	[Symbol]	CONSTRUCTION DETAILS	[Symbol]

MISS Utility of West Virginia  
1-800-246-4848  
West Virginia State Law  
(Section XIV, Chapter 24-C)  
Requires that you call two  
business days before you dig in  
the state of West Virginia.  
IT'S THE LAW!

*Amel L. Reynolds* 12-13-17  
OPERATOR: ARSENAL RESOURCES  
ENGINEER/SURVEYOR: SLS LAND & ENERGY DEVELOPMENT

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Office of Oil and Gas  
JAN 24 2018  
WV Department of  
Environmental Protection

ARSENAL RESOURCES  
SLS Land & Energy Development  
HOWDERSHELT FINAL SITE PLAN  
COVE DISTRICT  
BARBOUR COUNTY, WV  
DATE: 10-16-2017  
SCALE: 1" = 200'  
CHECKED BY: E.L.R.  
FILE NO.: 7902  
SHEET 1 OF 14  
REV: 11-27-2017



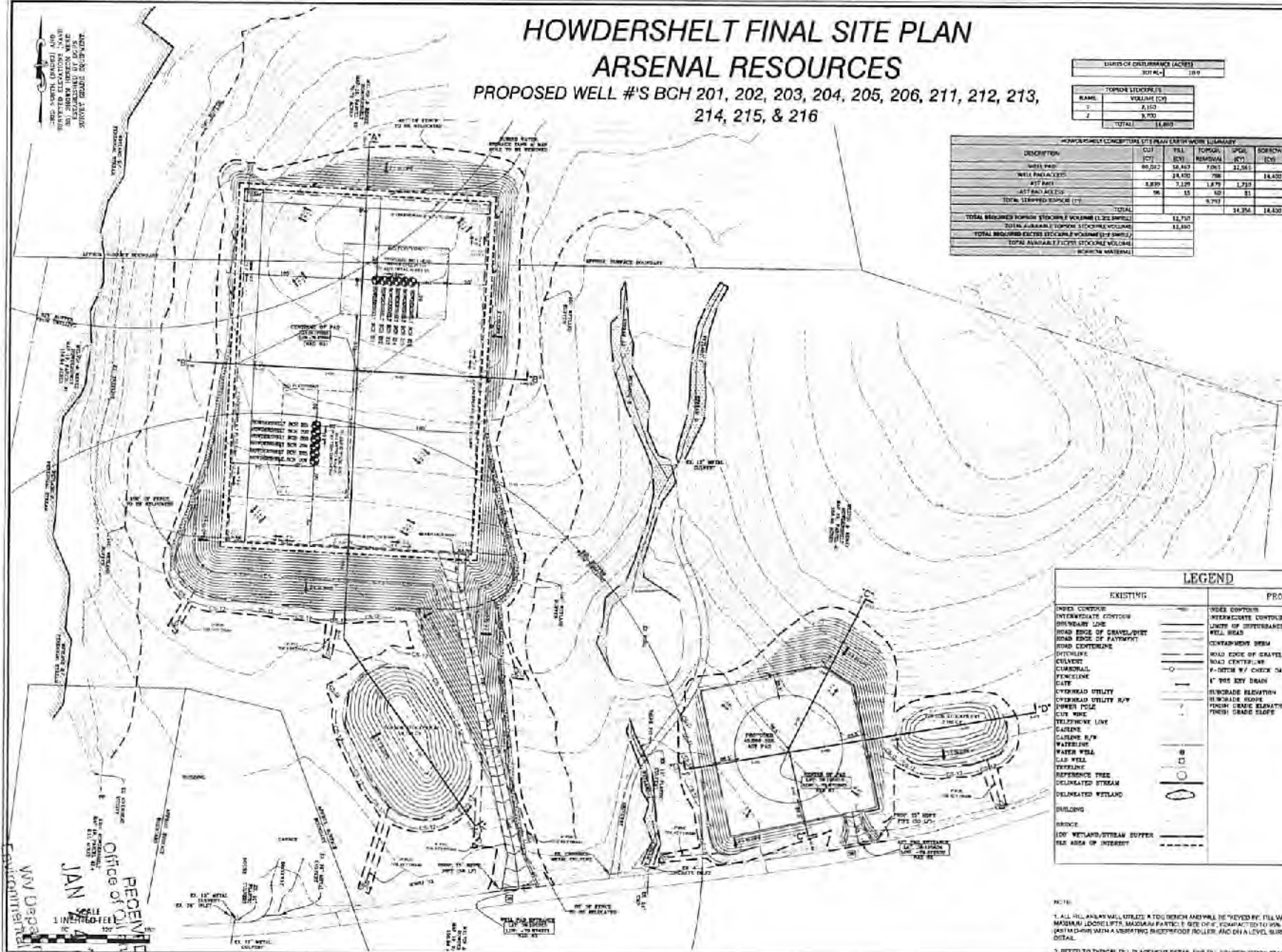
# HOWERSHILT FINAL SITE PLAN ARSENAL RESOURCES

PROPOSED WELL #S BCH 201, 202, 203, 204, 205, 206, 211, 212, 213,  
214, 215, & 216

LIMITS OF DISTURBANCE (ACRES)	
301 AC	10.9

TOPSOIL STOCKPILES	
NAME	VOLUME (CY)
1	2,110
2	5,710
TOTAL	7,820

HOWERSHILT CONCEPTUAL SITE PLAN EARTHWORK SUMMARY							
DESCRIPTION	CUT (CY)	FILL (CY)	TOTAL (CY)	SPILL (CY)	SOFTEN (CY)	AREA (SQ FT)	LENGTH (OF SLOPE)
WELL PAD	88,212	18,417	7,061	22,585		N/A	N/A
WELL PAD ACCESS		18,400	708		14,400	15%	270'
AST PAV	5,839	7,129	1,879	1,230		N/A	N/A
AST PAV ACCESS	96	15	10	11		N/A	N/A
TOTAL STAMPED VOLUME (CY)			9,793	14,726	14,400		
TOTAL REQUIRED TOPSOIL STOCKPILE VOLUME (1.5% SPILL)			12,710				
TOTAL AVAILABLE TOPSOIL STOCKPILE VOLUME			7,820				
TOTAL REQUIRED EXCESS STOCKPILE VOLUME (1.5% SPILL)			4,890				
TOTAL AVAILABLE EXCESS STOCKPILE VOLUME							
TOTAL AVAILABLE EXCESS STOCKPILE VOLUME (SOFTENING MATERIAL)							



LEGEND	
EXISTING	PROPOSED
INDEX CONTOUR	INDEX CONTOUR
INTERMEDIATE CONTOUR	INTERMEDIATE CONTOUR
BOUNDARY LINE	BOUNDARY LINE
ROAD EDGE OF GRAVEL/BIOT	ROAD EDGE OF GRAVEL/BIOT
ROAD EDGE OF PAVEMENT	ROAD EDGE OF PAVEMENT
ROAD CENTERLINE	ROAD CENTERLINE
UTILITY	UTILITY
CONCRETE	CONCRETE
CURBLINE	CURBLINE
UTILITY	UTILITY
OVERHEAD UTILITY R/W	OVERHEAD UTILITY R/W
UNDER PASS	UNDER PASS
CURB WIRE	CURB WIRE
TELEPHONE LINE	TELEPHONE LINE
CAUSEWAY R/W	CAUSEWAY R/W
WATERLINE	WATERLINE
WATER WELL	WATER WELL
LAS WELL	LAS WELL
DEVELOPE	DEVELOPE
DEPENDENCY TREE	DEPENDENCY TREE
DELIMITED STREAM	DELIMITED STREAM
DELIMITED WETLAND	DELIMITED WETLAND
BUILDING	BUILDING
BRIDGE	BRIDGE
100' WETLAND/STREAM BUFFER	100' WETLAND/STREAM BUFFER
100' AREA OF INTEREST	100' AREA OF INTEREST

NOTES:  
1. ALL FILL AREAS WILL UTILIZE A TDS BENCH AND WILL BE TYPED BY. FILL WILL BE PLACED IN 1" MAXIMUM LAYER THICKNESS. MAXIMUM PARTICLE SIZE OF 4" COMPACTED TO 95% PER STANDARD PROCTOR TEST IN 4" LAYERS WITH A VIBRATING SUBGRADE ROLLER, AND ON A LEVEL SURFACE. SEE TYPICAL BENCH DETAIL.  
2. REFER TO TYPICAL FILL PLACEMENT DETAIL FOR FILL CONSTRUCTION STANDARDS AND NOTES.



THIS DOCUMENT HAS BEEN PREPARED BY SLS LAND & ENERGY DEVELOPMENT FOR ARSENAL RESOURCES

INDEX SHEET  
**HOWERSHILT FINAL SITE PLAN**  
COVE DISTRICT  
BARBOUR COUNTY, WV

DATE 12-11-2017  
SCALE 1" = 80'  
DESIGNED BY K.L.N.  
FILE NO. 7962  
SHEET 3 OF 14  
REV 11-27-2017

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Office of Oil and Gas  
WV Department of Environmental Protection  
JAN 24 2018